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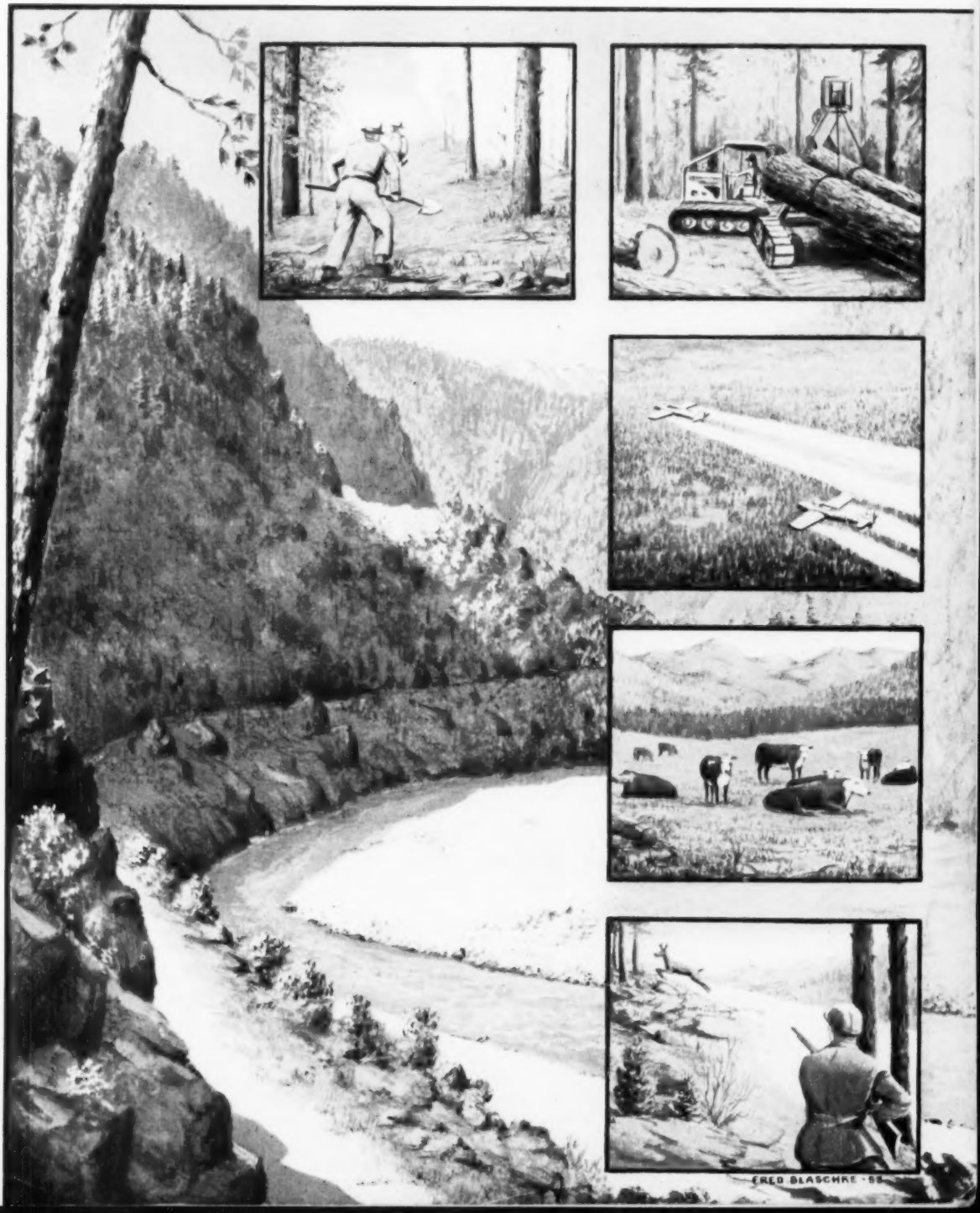

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Volume 51
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Journal of Forestry

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Soil-Vegetation Surveys of Wildlands

John L. Retzer
Soil scientist,[1] Fort Collins, Colo.

WHAT IS the place of soil-vegetation surveys in the management of wildlands? What are the problems involved in making surveys in mountainous terrain? These are two questions often asked by those interested in the management of wildlands. Some answers can be supplied from research and field experience in the Rocky Mountain region.

Site and Soil

Sites are areas of land with which the land manager works. Site has been defined as follows: "An area considered as to its ecological factors with reference to capacity to produce forests or other vegetation; the combination of biotic, climatic, and soil conditions of an area" (*1*). The essential point is that site as considered herein is an area on the earth's surface. When critically inspected its broad component parts will be found to consist of rock, soil, and land form or slope. These three physical factors are modified by the vegetation and climate plus the manipulations of man. Within each of these factors, variations may occur which modify the value of the site to man. The variations may be great or small, but so far as the rocks, land forms, and climatic factors are concerned their pattern within the site is more or less fixed and cannot be altered by man. Instead, to derive the greatest values from the site, man must work within the limitations set by nature. Failure to do so results either in deterioration of the site or a nonproductive expenditure of effort in terms of time and money. We see site, then, as an area wherein an integration of the various factors occurs that results in a certain level of productiveness of plant life.

Man's manipulation of site is limited to changes he can bring about in vegetation and soil. Since vegetation is dependent on soil for moisture and nutrients, then soil becomes the most important single factor that man can work with and change for better or worse and thus markedly alter the productiveness of the site.

Soils have specific morphologic characteristics which form the basis of identification enabling one to classify them much as plants are identified and classified. To be useful in land management it is essential to know where the different soils are and how extensive each is in a particular area or region. These data can only be obtained by field mapping.

Field Mapping

Mapping is the science of the geographers. Soil mapping makes use of the principles of geography with a modification of techniques to meet the requirements for the field study and delineation of soil boundaries. Soil mapping is only one phase of the general field of soil science, but it provides a base for the systematic study and application of the data made available from studies of soil chemistry, physics, and microbiology.

Survey Objectives

The objectives for which a survey is made must be clearly recognized and defined before the survey starts. Field surveys are expensive. The collection of data that are not, or may not be useful in management can make costs prohibitive. Surveys of forest and range lands in the West should be based upon the limitations of feasible land management foreseeable in the region for the next 50 years or so. Factors that influence the objectives are as follows:

1. Most land values, even under current inflated prices, range between $5 and $30 an acre.
2. In sharp contrast to cultivated lands, wildlands have limited uses. They are chiefly valuable for range, timber, water, wildlife, and recreation.
3. For the most part, management deals with native vegetation, and the preference of different species for soils is fairly easy to determine. In comparison to the great numbers of cultivated crops relatively few crops grow on wildlands.

These and other considerations exert a controlling influence upon the intensity of management that can be applied to wildlands. The survey objectives should be designed to collect data most useful to a relatively extensive type of management.

Mapping Intensity

Mapping intensity, or the minimum size of areas delineated, is an important consideration in planning a survey. As the intensity increases, costs increase in all steps up to the finished product. Surveys of cultivated lands have constantly increased in intensity since the beginning of surveys in the United States in 1899 (*5*). This has

[1] Rocky Mountain Forest and Range Experiment Station, maintained by U. S. Department of Agriculture, Forest Service, in cooperation with Colorado A & M College, Fort Collins, Colorado.

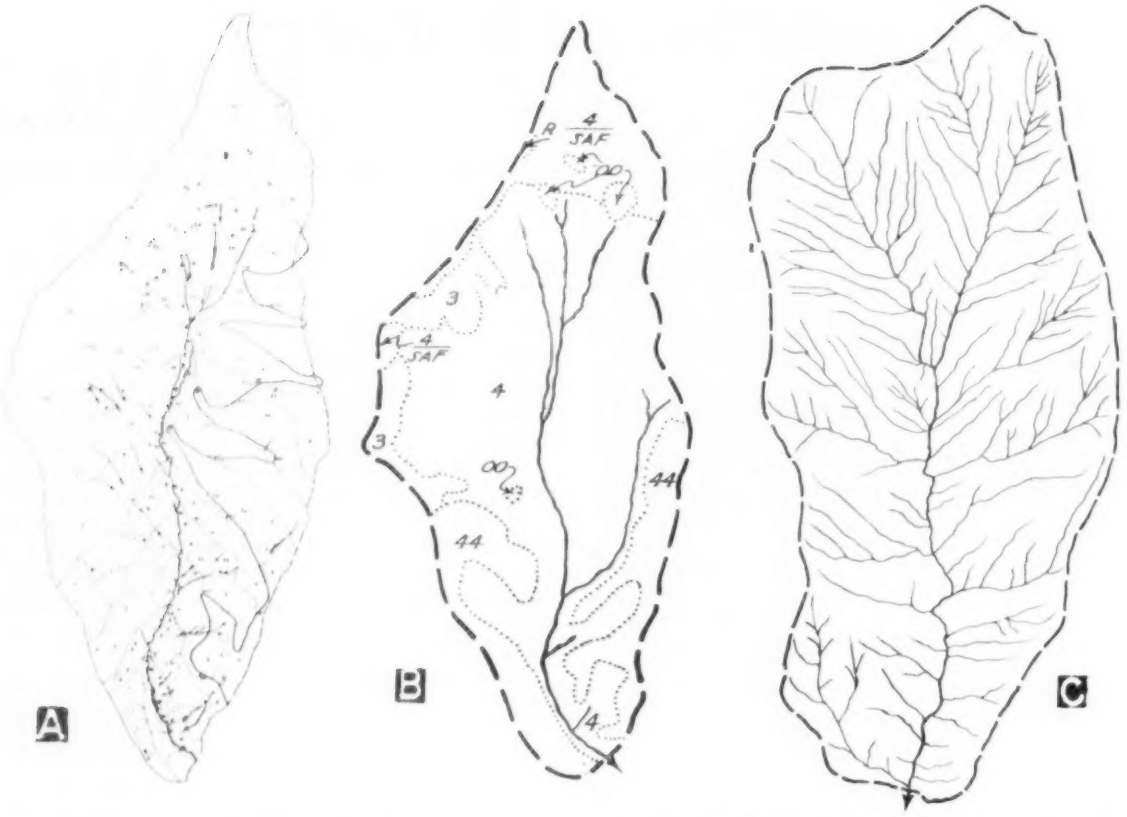

FIG. 1.—Comparison of two intensities of mapping on a mountain watershed and development of drainageways on two mountain watersheds having contrasting types of relief.
A. Soil map showing intensive survey using the soil series as the unit of mapping. Map was made for research purposes.
B. Soil map of same area using the soil association as the unit of mapping. Map was made for land management purposes.
C. Highly developed drainage system in very mature, extremely steep topography. Compare to poorly developed system in A where the slopes are less steep on early mature topography.

paralleled the intensification of farming practices and the use made of such surveys has fully justified their increased cost. The same general trend can be expected for wildlands.

The management of wildlands in the West is definitely extensive and may not change greatly in the near future. Land administrators deal in units of thousands of acres. In the Rocky Mountain Region, ranger districts on national forest lands range from 80,000 to 490,000 acres in size and with improved communication systems the current tendency is to consolidate many of these in the interest of administrative economy. The approximate size of the average grazing allotment (the actual management unit) is 20,000 acres. Timber sales have an average size of about 1,000 acres. The operating unit in the range country of the Great Plains is about 10 sections, or 6,400 acres; the actual management unit on the ground is about 640 acres. This type of management definitely limits the intensity of mapping. The manager or operator cannot make use of very detailed information unless some highly significant feature of the landscape is involved.

Surveys of wildlands in California have generally been based on 40 acres as the minimum size of areas to be delineated (*6*). That is a reasonable minimum size for the Rocky Mountain region, but it is useful only where the area is distinctly different from adjacent areas. Usually the units on the ground will be much larger. Figures 1A and 1B are the same 710-acre watershed mapped by two survey intensities. Figure 1A, a map made for research purposes, shows each important soil difference. This map forms the basis for timber and watershed research by making it possible to stratify the collection of data from areas of like or unlike soils as may be desired. Its detail is far too great to be presently used in practical land management. Figure 1B is a map of the same area where the basic soil differences are shown at the level believed to be useful in current management operations of high-altitude lodgepole pine and spruce-fir. These data could well be shown on a scale of 1 inch to the mile.

Significant Factors to Map

Maps should highlight those soil features that are most significant to the anticipated management practices. For wildlands these features are soil texture groups, depth

or thickness of the soil over bedrock or impervious layers, fertility and erodibility or stability.

The thickness of soil seems to have an important influence on site potential, especially for range soils. Olson (3) showed that shallow soils were related to accelerated erosion and a less desirable plant cover in Utah. A similar relationship has been shown for high mountain areas in Colorado (4). In this instance, herbage production was 1,395 pounds, 345 pounds, and 273 pounds per acre respectively for deep, shallow, and very shallow soils that were alike in all other characteristics. A somewhat similar relationship has been observed between soils and the response of tree growth. Surveys in California (2) have placed strong emphasis on depth of soil in mountain areas.

In the Rocky Mountain region, the relation between rock types and the group of soils that develop from them is direct and highly significant. For example, one can always be sure that the group of soils developed from granites will have important differences from soils developed from shales or limestones. This is not to say that all soils developed from granites are alike, because they are not. Soils developed from granites may be deep or shallow; they may have open, permeable subsoils, or dense clay subsoils —differences that are important to use, even under extensive management. But comparing groups of soils, those from granites will be infertile, coarse textured, shallow and erodible, compared to the generally deep, medium-textured, fertile and erosion-resistant soils developed from basalt or limestone. This relationship is so reliable that the parent rock type is the first criteria considered in looking for differences in soils. A soil, as identified at the series level, is always associated with the same parent rock type.

Differences in topography are extreme in mountain areas. Steepness of slope often completely dominate all other features in determining the kind of management applicable to an area. Much remains to be learned of critical slope groupings on different kinds of soils as related to the kinds of use that can be made of an area. Steepness of slope is often related to geomorphic land forms and to the characteristics and stability of the drainage system. Figure 1C is a 234-acre watershed where the regional topography has reached an extreme degree of maturity. The average slope is 80 percent with a 2,050 foot difference in elevation between the top and bottom of the watershed, a linear distance of 5,550 feet. The area is drained by 161 channels; the drainage density (length of streams per square mile) is 38.3 and the stream frequency (number of streams per square mile) is 440. In sharp contrast the watershed in Figure 1 A, B has not reached the same extreme degree of maturity. The elevation difference here is 2,850 feet in a distance of 2⅛ miles. The area is drained by only four continuous streams, while the few remaining others are discontinuous and do not enter the main channel.

These are examples of how a study of land forms and stream systems can contribute fundamental knowledge to guide land management. Land forms are often as important and may be more important than soils in some areas.

Field Techniques

Field work should always be done on aerial photos not only because of the speed and increased accuracy of locating boundaries, but also because of the advantages of keeping the mapper located. The scale of the conventional contact prints is adequate for field work.

Inaccessibility is an important factor in mountain terrain. Roads and trails are more numerous now than formerly but many large areas are still without them. Access is by four-wheel drive vehicles, horse, or by walking in the more rugged areas. Often much time is required merely to get to and from the place of operation. This one factor often greatly hinders the rate of mapping progress.

Visibility of type boundaries is often better in the mountains than on the plains. The most satisfactory procedure is to sketch type boundaries on the map while viewed from across the valley. The field man then crosses to the other side of the valley to ground-check the type and to draw in the boundaries for the side he just left. Because of the rough terrain and dense timber, it is often impossible to sketch boundaries while standing on or in the type.

Under ordinary conditions the rate of ground coverage will range from 1 to 3 square miles a day in mountainous wildlands. Differences are due to accessibility, experience of the field man, complexity of the land pattern, and the degree of familiarity with the area.

Classification

The classification of mountain soils has been a subject of much interest. Not many years ago soils in mountainous areas were looked upon as not being worthy of investigation because of their shallow and stony nature. This attitude has now changed and these soils are the subject of intensive scientific study in many places. Although many mountain soils are shallow and stony, it also is true that some are very deep and fertile and consequently highly productive.

For study, investigation, and land management purposes the soil series is the most useful unit of classification for wildlands. It has definite features recognizable on the ground and the allowable variations in features are narrow in comparison to the soil family and the Great Soil Group classifications. It is a unit whose productivity can be determined for different uses by experimentation and observation. Prediction can be made as to its response under different systems of management and for different uses. In the botanical world the genus is roughly equivalent to the series.

When important differences in site occur, they may be recognized by plant differences, either of species, composition, or vigor of growth. The site can likewise be recognized from the characteristics

of the soil. Changes in the vegetation due to fire, overgrazing, logging, or as a stage in the ecological succession may mask the real potential of the site. But soil characteristics are permanent compared to vegetation and thus are useable for evaluation of site potential with much more assurance. The soil series unit of classification meets this purpose to a high degree of satisfaction.

The Great Soil Group is a higher category in the system of soil classification. As a broad unit of land it includes a high degree of generalization. For land management purposes it has no specific value.

There is an important distinction between the soil series as a basic unit of classification and the soil association as the basic unit of mapping. It is possible to use the soil series as the mapping unit in mountain areas as is shown in Figure 1A. In that instance, only very minor differences occur in the soil within a designated area. When it becomes necessary to generalize the mapping either to reduce cost or because the greater detail is not useful to the land manager, then the soil association becomes the mapping unit. This is the case in Figure 1B. Within each of the designated units occur differences in soils either because the areas were too small to map separately or because the differences are not overly significant to the type of land management that will be applied. Sites as delineated by soil association mapping units are somewhat broader or less precise in their makeup than when associated with the occurrence of one specific soil. Nevertheless, such units of land still retain specific soil characteristics and other features that permit their being managed by the same system. With minor variations such areas respond to management in the same way. Research should usually be done on the basis of the soil series. This will tend to limit experimental variations due to soils.

In all surveys of wildlands the soils should be correlated on the national level in order to bring the advantage of continuity and the avoidance of nomenclature duplication to managers of wildlands.

Combination Surveys

Although a survey of the physical factors — soils, topography, and rock types—will supply the basic information for site evaluation and site potential, additional information is needed. Managers of wildlands for the most part are interested in the manipulation of native vegetation. Therefore, they need information on the kinds and densities of timber as well as on the herbaceous cover used for grazing.

Work in California has been highly successful to date in combination surveys of soils and vegetation, but only the timber and shrubby covers have been broken into types. A somewhat similar approach was used in a range survey of the Pike National Forest in Colorado (1946 to 1947) with emphasis on the herbaceous cover rather than the timber.

The combination soil-vegetation surveys supply the best and most usable information to land managers. The approach is less costly than separate surveys for each kind of information and the data are more permanent than for vegetation surveys alone.

Much work remains to be done in perfecting the details of this approach but a good start has been made. This approach is likewise in line with increased economy and efficiency in the use of public moneys.

Uses of Survey Data

Soil-vegetation surveys show on maps the location and extent of kinds of soil and types of vegetation. The units are defined and described so that anyone using the map can obtain an excellent idea of the field conditions without visiting the area. It is important to recognize that this is an objective classification of conditions on the ground but it is more than that. It is a base to work from.

The usefulness of the basic data to land management is derived from interpretations as to the potential values of the different mapped units for the different uses desired. Interpretations are made on the basis of experience, research, and by deduction from known general facts about soils and vegetation. Since the soils are described as they actually occur in the field, then their potential can be classified in a number of different ways for a number of different purposes. A soil with a high potential for the growing of grass may have a very low potential in comparison to other soils for tree growth. These are subjective or use classifications.

Subjective classifications can rate each soil unit on the map as to its relative potential value for range, timber, wildlife, water yields, engineering and other purposes. Areas suitable for reseeding can be selected from the soil map and rated as to the difficulty of reseeding, the potential production and the erosion hazards involved. The value of any use classification will depend upon the knowledge and skill of the person or persons making the classification. It should be clearly recognized that data are lacking to rate all soils and even major groups of soils for all uses that may be made of wildlands. This will only come from critical observations and experience of the men in the field and the scientists working intensively on specific problems.

In connection with the above, soil-vegetation maps can fill another void present in wildland management. The data on the maps can draw attention to fundamental differences in pieces of land and thus encourage and sharpen observations of field men. They will be able to organize, classify and record observations which otherwise would be passed off for lack of a satisfactory pigeonhole in which to place them. By means of the soil-vegetation map experiences learned in one place can be applied to similar lands elsewhere as shown on the map. In this manner the admittedly meager information we now have can be extended with confidence to much wider areas and thus its value is increased many-fold.

Soil-vegetation maps are essential to workers in forest and range research. Much of this research is expensive to install and years of record-taking are sometimes required before conclusive results are to be had. It is essential that experiments be located on sites that are truly representative of large areas of land. The less representative the research site is of the problem area, the less valuable will be the research results. Once the research is completed, soil maps are the bases for extrapolation of the results into practical land management.

Soil-vegetation maps have great potential value in the development of long-range plans for management. The soils data show the potentialities of a site and from that realistic objectives can be set up. Area planning provides for continuity of management over long periods regardless of changes in administrators. Based on the potentialities of a particular piece of land, area planning will bring into fullest expression the principle of multiple land use, establish priorities of use, based on soil potentialities, and bring the greatest benefits to both the local users of wildlands and to the nation as a whole.

Summary

Research in the Rocky Mountains and elsewhere has demonstrated that soil-vegetation surveys are feasible and can be readily made for wildlands. Soils vary widely in mountainous lands and have a very important effect on the use potentials of sites. Soil-vegetation maps are concise reports which show the basic differences in soils and the aerial extent of each important unit. Much data are now available to permit interpretation of the basic soil knowledge into use-classes for different purposes important in land management. As yet the use classifications are weak in many places, because of inadequate research knowledge as to how important soils will respond to treatment. However, use classifications defining site potentials for different uses are wholly dependent upon having the basic data which shows the real differences in lands. These basic data are best organized and shown on maps. By means of soil-vegetation maps the highest potential use can be determined for each piece of land, as well as relative importance of subordinate uses. Soil maps thus become a foundation upon which multiple land use can be practiced with confidence.

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Cecil R. Gehr (1902-1953)

Cecil R. Gehr, Los Angeles County Forester and Fire Warden, died in an automobile crash on July 14, when he was proceeding to a fire in the Angeles National Forest, near Sunland, Calif. He had his siren and red lights operating, but was struck by another car, and died shortly afterward.

Chief Gehr was known throughout the state for his outstanding work in fire control and forest conservation. He started with the Department of County Forester and Fire Warden as a fireman in November, 1924, progressing until in 1940, he was made assistant fire warden in the Malibu Division, which post he held for nine years until he was made deputy chief in 1949. When Chief Spence D. Turner retired in April, 1952, Mr. Gehr was appointed to fill his place.

Born in Pasadena, May 22, 1902, he attended the University of California School of Forestry, Extension Division. He is survived by his wife, Helen C. Gehr, and two sons, George and William as well as a brother, George A. Gehr of Spokane, Wash.

He was appointed by Governor Earl Warren to the State Disaster Council Fire Services Advisory Committee as well as to the State Fire Marshal Advisory Board, and was regional fire chief, State Office of Civil Defense. He was a member of the Society of American Foresters; California Fire Prevention Committee; Los Angeles Chamber of Commerce Conservation Committee; and International Association of Fire Chiefs.

The Tree Farm Program—An Asset to Fish and Game Management[1]

W. D. Hagenstein
Forest Engineer, Industrial Forestry Association, Portland, Oregon.

AFTER STUDYING the results of thirty years of fire protection, industrial foresters of the Douglas-fir region decided in early 1941 that, to grow timber successfully, greater public cooperation must be obtained to assure adequate fire protection. A country editor in Grays Harbor County, Washington, suggested that if foresters wanted to attract public support for timber growing they should call it "tree farming." His thesis was that the public would understand the term "tree farm" because it implied growing timber as a crop. The foresters were skeptical, but they listened to the pleading of the country editor and adopted his suggestion.

As it turned out, it was a happy idea. More applied forest management has occurred in the region since adoption of the formal tree farm program in 1941 than in the century and a quarter since Factor John McLoughlin of the Hudson's Bay Company harvested the first tree. Public propagandists call forestry "conservation" or "reforestation." Forester's call it "silviculture," forest management" or "sustained yield." But "tree farm" implies better the idea of growing and harvesting trees as a crop.

A tree farm is a private forest which is being managed under consciously applied forest practices. A tree farmer agrees: (1) to hold his land for permanent forest production; (2) to provide adequate protection against fire, insects, disease and damage by destructive grazing; (3) to harvest his timber crops forestry-wise, and (4) to allow professional foresters to inspect his property to help him do a better job in his own interest. Tree farms are sponsored by forest industry associations throughout the country which certify them where the owners will follow the requirements. Because the writer was in on the beginning of the tree farm program and is still engaged in promoting them and assisting their owners in the Douglas-fir region, the emphasis in this paper is on that locality.

The primary purpose of tree farms is to grow continuing supplies of raw materials for wood utilization plants. Like all forest land under management, tree farms can and do provide game, fish, and water.

The Pacific Northwest can take credit for the national tree farm program, as it was there the movement started. From the modest beginning of the Clemons Tree Farm of 120,000 acres, the program has spread throughout the nation. On May 1, 1953 it encompassed 4,316 private properties containing more than 28 million acres of productive forest in 35 states. West of the Great Plains there are 548 tree farms totalling 9,476,681 acres. Table 1 lists the certified tree farms of the western states.

In the Douglas-fir region of western Oregon and western Washington there are 142 certified tree farms. They comprise 4,201,361 acres. Table 2 shows how tree farms have increased in the region since 1941.

The forest and its industries earn more than half the Douglas-fir region's total annual income. They provide America with more than a quarter of its forest products each year. The annual value, at manufacturer's prices, of forest products in western Washington and western Oregon is more than $1,600,000,000. The forest industries furnish direct employment to 150,000 people and indirect employment to half again as many more. The annual wages of the direct forest industry workers alone total nearly $600,000,000. If tree farming is practiced at increasing levels of intensity, the forest industries will always contribute the principal share of the region's economy. Tree farms mean standard of living insurance to all Northwesterners.

To show the importance of private lands for timber growing, as well as for the other renewable crops of game, fish and water, Table 3 outlines the ownership of commercial forest land in the region. Taxpaying citizens own 51 percent and the public owns the balance. Because the land ownership pattern is often intermingled, coordinated forest protection, road development and management are essential.

As stated, the tree farmer's principal objective is to grow wood. However, his management practices continually change the vege-

TABLE 1.—CERTIFIED TREE FARMS IN WESTERN STATES, MAY 1, 1953

	No. of properties	Area (Acres)
California	128	1,591,934
Colorado	4	77,580
Idaho	110	697,498
Montana	47	853,955
Nevada	1	12,984
New Mexico	1	80,000
Oregon	85	2,943,888
South Dakota	1	17,260
Washington	170	3,161,025
Wyoming	1	40,557
Total	548	9,476,681

Source: American Forest Products Industries, Inc.

TABLE 2.—GROWTH OF CERTIFIED TREE FARMS IN THE DOUGLAS FIR REGION 1941-1953

Year[1]	Tree farm area (acres)	Proportion of total industrial forest land (percent)
1941	120,000	1.1
1942	1,872,919	16.7
1943	1,872,919	16.7
1944	2,045,437	18.3
1945	2,046,655	18.3
1946	2,196,831	19.6
1947	2,524,693	22.6
1948	3,014,141	26.9
1949	3,270,692	29.2
1950	3,677,710	32.8
1951	4,010,302	35.8
1952	4,085,048	36.5
1953	4,201,361	37.5

[1]At end of year except 1953 data are for May 1.

Source: Industrial Forestry Association.

[1]Address before annual meeting, Western Assn. of State Game and Fish Commissioners, Long Beach, Calif., June 2, 1953.

TABLE 3.—COMMERCIAL FOREST LAND OWNERSHIP—DOUGLAS-FIR REGION, 1945
(Area in thousands of acres and percent of total in each ownership class)

Ownership Class	W. Washington Area	W. Washington Percent	W. Oregon Area	W. Oregon Percent	Douglas Fir Region Area	Douglas Fir Region Percent
Private						
Farm Woodland	779	6.9	1,172	7.9	1,951	7.5
Industrial & Other	5,886	52.5	5,373	36.3	11,259	43.3
Total Private	6,665	59.4	6,545	44.2	13,210	50.8
Public						
National Forest	2,661	23.7	5,021	33.9	7,682	29.5
Indian Reservations	224	2.0	17	0.1	241	.9
O & C Lands			2,036	13.7	2,036	7.8
Other Federal	19	0.2	223	1.5	242	0.9
State	1,129	10.1	428	2.9	1,557	6.0
County & Municipal	514	4.6	543	3.7	1,059	4.1
Total Public	4,547	40.6	8,270	55.8	12,817	49.2
Grand Total	11,212	100.0	14,815	100.0	26,027	100.0

Source: Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service.

TABLE 4.—BIG GAME HARVEST ON TREE FARMS AND INDUSTRIAL FOREST LANDS IN DOUGLAS FIR REGION, 1949

	Area in acres	Animals taken Deer	Elk	Total	No. of hunters
Tree Farms Reporting[1]	2,405,544	4,645	1,154	5,799	51,505
Total Tree Farms[2]	3,270,692	6,315	1,154	7,469	70,000
Total Industrial Forest Land[2]	11,259,000	21,625	1,154	22,779	150,000[3]

[1]Animals taken tallied by tree farm foresters.
[2]Tree farm data expanded on straight acreage basis except for elk.
[3]Estimated.
Source: Industrial Forestry Association.

TABLE 5.—ESTIMATED BIG GAME HARVEST—NATIONAL FORESTS DOUGLAS FIR REGION, FISCAL YEAR 1950
(July 1, 1949-June 30, 1950)

National Forest	Deer	Elk	Total
Gifford Pinchot	500	60	560
Mt. Baker	200		200
Olympic	350	240	590
Snoqualmie	150		150
Mt. Hood	460		460
Rogue River	470		470
Siskiyou	510	15	525
Siuslaw	500	30	530
Umpqua	190		190
Willamette	160	10	170
	3,490	355	3,845

Source: Pacific Northwest Region, U.S. Forest Service.

tative cover through harvesting and growing trees. Thereby he provides habitat for fish and game and influences water supply. While he is bringing another timber crop to useful size, he provides, at no cost to the public, favorable conditions for the development of wildlife. He is interested, just as are game managers, in seeing the game crop harvested. But he also wants to protect himself against the dangers of public use of his logging roads. He must maintain his legal right to deny public use of his land when it is unsafe because of dangerous forest fire weather. His land management requires the same safety and fire precautions as state and federal forests. This is the reasoning behind the laws of Washington and Oregon which allow a private forest owner to close his lands to entry.

It's an old western custom that everyone has the right to hunt and fish anywhere at any time except for the restrictions of licenses, closed areas, and bag limits. Note that reference is made to the word "custom". No one has a "right" to hunt and fish on other people's property, except in accordance with the legal concepts of permitted use at the owner's discretion. This includes lands which belong to the public itself and are administered by the state and federal governments. Europe almost experienced a real timber famine because of the historical "rights" from medieval times of using both public and private forests unrestrictedly for wood, grazing, hunting and gathering of litter. Slowly, but surely, as the necessity for forest management was recognized, rights were liquidated and public use of both public and private forests controlled under the essentials of land management to maintain the forest and game resource. It was the European experience which led to the restriction of right of public use in American forests. The same applies to the hunting season restriction and limitation of numbers or sex of animals to be taken to maintain a growing stock to perpetuate the desirable game species for food and sport. Forest and game management have a common necessity of adequate growing stock if their fruits are to be enjoyed perpetually.

To learn how much big game was being harvested annually on Douglas-fir region industrial forests, a study of hunting use of certified tree farms was made in 1949. The results of this study are reported in Table 4.

To compare the big game harvest from industrial forests with that from another major forest ownership, Table 5 shows the estimated big game yield from the national forests of the Douglas-fir region for 1949.

These data show that industrial forests contribute more to the region's annual big game harvest than any other ownership class. The obvious reason for this is that there is more game on them and they are more accessible. Private forests have always contributed the largest proportion of the region's annual timber harvest, thus creating favorable habitat conditions for big game. The national forests, except for their alpine country, are mostly occupied by dense, mature forests. Because wide-scale cutting on them has only begun in the last decade, they have little favorable habitat at present to support a game population proportionate to their total acreage. The study indicates an animal harvested for every 415 tree farm acres. On the national forests it took 1998 acres to provide one big game animal.

If it is desired to attain a maximum game population, mature timber must be harvested and put under management to maintain a sustained quantity of favorable habitat.

Tree farms capably demonstrate that no one has a corner on multiple land use. They provide a timber crop, a game crop, a fish crop and a water crop. This is one of the strongest arguments for public encouragement of better forest fire prevention and equitable taxation which make tree farm management successful. With their constantly increasing acreage, tree farms assure a never-ending supply of essential forest products, as well as abundant game, fish and water. The only difference between them and public forests is that the former must support themselves. Their whole income depends on the growing and harvesting of wood.

Fish and water crops from tree farms have been mentioned casually. What do tree farms contribute to the supplies of these valuable resources?

For years uninformed critics of timber harvesting on private lands in the Douglas-fir region have alleged, but without data, that logging impaired both fish and water crops. Because of the region's humid climate the ground is seldom devoid of vegetation more than one 6-month winter season following timber harvesting and slash burning. The natural plant succession of grasses and weeds comes in very quickly following cutting or fire. In five to ten years they are in most instances replaced by conifers. In other words, the soil is protected against the destructive influences of the elements. This is truer in the Douglas-fir region because of the climate, vegetal types and form in which most of the precipitation occurs, than in most other parts of the world.

The best example in the Douglas-fir region of the effect of timber harvesting on water supply is the nearly half-century's experience of the City of Seattle on its Cedar River watershed. Data collected from this 91,000-acre forest show that timber cutting has neither produced significant erosion, nor diminished nor made less pure the excellent water supply. While hunting and fishing are prohibited within the watershed for sanitary reasons, logging has been continuing for half a century under the same methods of clearcutting and slash burning used on industrial tree farms and national forests throughout the region. The Seattle Water Department has accomplished one of the outstanding jobs of multiple use forestry in the world.

Most of the natural feed of fishes indigenous to the Douglas-fir region requires a forest habitat. On tree farms this is provided by protection against fire, coupled with timber harvesting practices which rotate the forest on a permanent basis. The mechanics of logging sometimes impedes streams through concentration of debris, but this is no longer as common as it was in the days of the engineering limitations of splash dams and stream driving and railroad and skidder logging. Many tree farms protect watercourses by leaving stream-side strips and plan their logging so as not to yard through them.

In earlier years relations between the forest industries and the public in the use of private lands for hunting and fishing were not too favorable or harmonious. Since the beginning of tree farming in the Douglas-fir region, the forest-using public has contributed outstandingly to improvement in forest fire prevention. In recognition of this, private forest owners are providing many facilities for hunters and fishermen. They welcome use of their lands for all kinds of outdoor recreation, under proper safeguard against fire and accident.

Tree farmers are cooperating also with state game and fisheries departments in biological studies. Wildlife technicians are getting information they need from tree farmers. In turn they assist industrial foresters in solving some of their problems caused by rodents, birds, deer and bear.

Here are a few examples of what tree farmers are doing to extend hunting and fishing privileges to the public.

Because of the inherent danger of using logging roads, and because of damage to unsurfaced roads during wet weather, sportsmen are not allowed generally to drive into most tree farms. However, during the last ten years they have been allowed to walk in or are taken in on crew trucks. Their game has been hauled out by tree farmers. This has precluded many fatal accidents. It has prevented damage to dirt roads which are so vital for fire protection.

Some tree farms have furnished various facilities including buildings with water and fuel; others have developed areas much like the forest camps of the national forests. These facilities are all provided without charge.

In some of the tree farms where the only access is by railroad, the companies have operated speeders to take hunters into the woods and haul their game.

One of the outstanding examples of accommodation furnished is at a tree farm where entry is allowed by permit and maps are provided. While the guests are waiting to get their permit and information from the company's forester, they are served hot coffee.

One might wonder why tree farmers are so eager and willing to allow thousands to use their properties each year for hunting and fishing. The principal reason is that tree farmers realize they must get along with their fellow man. What better way to get along than to let him harvest the game crop, if he is willing to do it under a common sense code of safety and fire prevention? This is building up excellent relations between tree farmers and the public.

Tree farms are the latest thing in private forest management in the United States. After a dozen years they have established a significant record of progressive forestry accomplishment. They are managed by their owners primarily for the production of timber crops. Any rational land management, however, makes available for harvest all the renewable crops. In the Douglas-fir region where half the forest land is privately owned, well managed tree farms, more accessible than the average of the public

lands, constitute a great multiple use resource for timber, game, fish, water, and recreation.

Tree farmers want the public to use their lands for hunting and fishing. They ask only the same consideration of their problems by the public that the public asks of itself in the management of its own forests, namely, adhering at all times to the principles of fire and accident prevention. Tree farms mean permanence and their future is unlimited. They mean a regular supply of forest products, continuing well paid jobs, and a perennial source of hunting and fishing enjoyment, as well as an adequate supply of good water. Above all, they show that within the framework of our form of economy and government, proprietary land ownership and public use can work together. This obviates the necessity of excluding people from private land because a few have abused the privileges of the many.

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THE UNITED STATES now has a total of 4,432 tree farms, with a total of 28,373,196 acres, according to a bulletin issued recently by the American Forest Products Industries, Inc.

Breakdown of the figures shows that the southern states lead with 2,349 farms, and a total acreage of 16,557,362. Totals for other sections of the U. S. are as follows: Western States, 564 tree farms, 9,492,416 acres; Lake States, 625 farms, 1,580,228 acres; Central States, 330 farms, 182,013 acres; Plains States, 137 farms, 39,683 acres; and Eastern States, 427 farms, 521,404 acres.

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Spruce. *From the painting by Thoreau MacDonald, commissioned by the Canadian Pulp and Paper Association. It is one of a series of forest scenes by distinguished artists depicting the chief tree species presently harvested for pulpwood by that industry.*

A Study of Recently Killed Trees in the Western White Pine Type

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To DETERMINE the prevalence of agencies other than that of pole blight found associated with recently killed trees, a study of western white pine (*Pinus monticola* Doug.) and associated species was made during the period 1949 to 1952 inclusive. Most of these trees were in the vicinity of plots established to measure the progress of pole blight in western white pine (*1, 2, 5*). Others were examined in various plots both within and outside of the present spread limits of this disease. However, areas showing heavy beetle attacks were not included in the sampling of dead trees.

Two groups of trees were examined, those selected and labeled before death (Group 1) and those which were selected and diagnosed at death (Group 2). The trees of Group 1 located near the progress plots and selected in advance of death showed various stages of pole blight symptoms. These selected trees, totaling 100, were lettered with paint and were analyzed for agencies when found dead. Symptom index values (*2*) were recorded for each tree. Later these index figures were translated into a simple classification based upon symptom stages listed as Early (I), Intermediate (II), and Advanced (III) (Table 1.)

In all cases, an attempt was made to obtain as complete a diagnosis of the dead and dying trees as conditions and time permitted. Symptoms and signs were recorded for the crown, trunk, root collar and roots. The following were noted for each tree: color and dwarfing of needles; stunted growth of leader and twigs; resinosis and sunken areas of the bark, trunk and crown injuries; branch and stem cankers of white pine blister rust, flagging of branches; presence of pitch tubes; primary and secondary bark beetles; fungus fruiting bodies; mycelial mats; and pitch wads. The crown symptoms were evaluated by means of the classification given in Table 1 for all trees selected before death.

The bark on the lower trunk was removed when it showed signs of insect attack and the type of insect was recorded. The bark surrounding the root collar and the root spurs was removed to uncover mycelial mats (see Fig. 1), sapstains, pitch flow, and insects. When a mycelial mat surrounded 50 percent or more of the root collar or more than half the root spurs were completely filled with mats, the tree was recorded under the fungus identified with the mat. On this basis the prevalence of the root rot fungi as recorded in this study is somewhat less than actual. Identification of the root fungi was made by using the common signs and symptoms of the four principal root rot agencies (*4*). Doubtful cases were checked by obtaining isolations of the fungi on malt agar slants.

The sampling of recently killed trees was well distributed throughout areas in the Kaniksu, Coeur d'Alene, St. Joe and Clearwater National Forests in northern Idaho and the Kootenai and Cabinet National Forests in western Montana.

Analysis of Data

A summary of the data is presented in Table 2 grouped under two categories, namely: trees selected before death (Group 1) and trees selected for analysis in the same year in which death took place (Group 2). The second category was broken down further into trees examined north of Bovill, Idaho where pole blight symptoms are found and those south of this area in which, to date, no pole blight has been recorded.

Out of a total of 1,236 trees examined, 578 or 46.7 percent were analyzed at death. Of these, 416 were dead white pines and 162 were dead trees of other species.

Table 2 shows *Armillaria mellea* (Vahl.) Quel., the honey mush-

TABLE 1.—GUIDE TO THE DIAGNOSIS OF POLE BLIGHT FOR DOMINANT AND CODOMINANT WESTERN WHITE PINE

	Upper third of crown				Entire tree	
Symptom stage	Needle color	Needle Condition	Leader and branch internodes	Resinosis, main trunk	Lesions[1] or dead faces	Crown density
I Early	Yellow-green	Slight dwarfing, first 1-3 years.	Some Dwarfing	None to light	None, or small lesions on upper trunk	Good
II Intermediate	Yellow	Plainly dwarfed. Some old needles cast. Some bunched at branch ends.	Decidedly dwarfed	None, or light to heavy	None, or long, narrow, dead areas in bark.	Fair
III Advanced	Yellow and brown	Decidedly dwarfed in all of upper crown. Bunched on up-turned branches. Old needles cast. Some dead tips.	Decidedly dwarfed. Tips often dead.	None, or light to heavy	Long narrow, dead areas in bark	Poor

[1]Basal flat faces running into root crotches are not included. Above symptoms are those for which no known causes can be determined in the field.

All ocular measurements of parts of diseased trees are compared with average estimates of normal trees of same age and crown class on the same plot or on nearby areas.

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room, to be the most prevalent agency recorded on 388 trees or 67.1 percent of the total of 578 dead trees. *Poria subacida* Pk., another root rot fungus, was recorded in 21 or 3.5 percent, while primary bark beetle attacks were found in 35 or 6.1 percent of the dead trees. Heavy sapstain at the root collar, white pine blister rust and miscellaneous agencies were recorded for 134 or 23.3 percent.

The table also shows that red-brown was the predominant color of the dead trees, 502 trees showing this color of the foliage while 54 trees had yellow foliage.

TABLE 2.—DIAGNOSIS OF RECENTLY KILLED TREES IN THE WESTERN WHITE PINE TYPE

Group	National forest	Number of trees		Prevalence of agencies								Crown color	
		Before death	Dead	Armillaria mellea		Poria subacida		Sapstain and misc.		Primary beetles		Red-brown	Yellow
				No.	Percent	No.	Percent	No.	Percent	No.	Percent		
1	Kaniksu Coeur d'Alene Kootenai Cabinet St. Joe (North of Boyill)	100	44	26	59.0	2	4.6	14[1]	31.8	2	4.6	36	8
2	Kaniksu Coeur d'Alene Kootenai Cabinet St. Joe (North of Boyill)	717	428	298	69.6	19	4.4	74[2]	19.6	27	6.3	387	19
	St. Joe (South of Boyill) Clearwater	419	106	64	60.4			36[3]	33.9	6	5.6	79	27
Totals		1236	578	388	67.1	21	3.5	134	23.3	35	6.1	502	54

[1]Blister rust in 1 tree.
[2]Duplication of sapstain with other agencies for 14 trees.
[3]Blister rust in 9 trees.

TABLE 3.—ANALYSIS OF DEAD SELECTED POLE BLIGHT TREES ADJACENT TO DISEASE PROGRESS PLOTS

Plot no.	No. of trees	Trees having symptom grouping						Trees at death showing				
		In 1950			By Sept. 1952			Armillaria	Poria subacida	Sapstain and misc.	Beetles	
		I	II	III	II	III	Dead					
1	5		5		4		1	1				
3	6			6		2	4	2		2		
5[1]	11			11		1	10	7		1	2	
6	7			7		5	2	1		1		
7	6	1	2	3	2	2	2	1		1		
8	6		2	4		3	3	1		2		
11	6		1	5	1	2	3			3		
12	7		1	6		2	5	3	2			
13	6		3	3	2		4	3		1		
14	7			7		4	3			3[2]		
15	6		3	3	2	2	2	2				
16	6		1	5	1	4	1	1				
17	6	1	1	4	2	3	1	1				
18	6		3	3	2	3	1	1				
19	6		2	4	1	3	2	2				
21	3	3			3		0					
Totals	109	5	24	71	20	36	44	26	2	14	2	

[1]Trees selected in 1949.
[2]Blister rust in 1 tree.

Group 1 Trees

Of the 100 trees in Group 1 of Table 2, 44 trees died and were analyzed. Of these 59 percent were heavily infected with *A. mellea*, 4.6 percent with *Poria subacida*, 4.6 percent attacked by primary bark beetles and 31.8 percent showed other agencies such as sapstain fungi, blister rust, etc. In this group the majority of dead trees had red-brown foliage.

A more detailed analysis of symptoms and dead trees of Group 1 is given in Table 3. The symptom records from 1950 to 1952 indicate a fairly rapid change from 5 trees in symptom Class I, 24 in Class II, and 71 in Class III in 1950 to 20 trees in Class II, 36 in Class III, and 44 dead trees in Class X for 1952.

Many of the trees recorded in Class III in 1950 were dead in 1952 and the trees of class I, II, and III in 1950 progressed rapidly in symptom changes during 1951 and 1952. The trees in Plot No. 5 were selected in 1949 and were in the advanced III symptom class. The greater loss of trees in this plot is due to the well advanced symptoms and to a four-year period of test. Of all the 11 trees in this plot, 10 were dead in 1952 and of these 7 trees were heavily infected with *A. mellea*. A smaller percentage, 38 percent, died in the three-year group.

Group 2 Trees

The two categories of trees in Group 2 show a total of 534 dead trees analyzed out of 1136 trees (Table 2). Heavy infections of *A. mellea* were recorded for 362 of the dead trees; 19 trees were infected with *P. subacida*; 33 trees had been attacked by primary bark beetles; and 110 trees had sapstain fungi, blister rust or other agencies recorded. As in the previous analysis of crown color, the majority of the dead trees showed red-brown foliage. Included in the trees with yellow foliage were a number of 12-20 year old white pine plantation trees infected with *A. mellea*. A tree attacked by *A. mellea* may often show a yellowing of the upper crown, shortening of needles and a dwarfing of internodes as it enters the last stage of disease. The color frequently changes rapidly to a reddish-brown in the year of death.

A transect run through a mature, 180 year old white pine stand in the East Fork of the Potlatch River near Boyill, Idaho contained 12 dead or dying trees of white pine, grand fir and western redcedar. All these when examined disclosed over 50 percent of the root collar of each tree surrounded by *A. mellea* mats. This sampling of dead trees represented about 38 percent of all the trees in the transect. Some white pine and grand fir trees along the

transect showed little or no crown symptoms but had copious resin flows on the lower trunks and root collars. Most of the resin was observed issuing from the bark cracks. The root spurs and root collar contained encircling layers of *A. mellea* mats under the bark. Numerous pitch wads were found on the upper root spurs just beneath the duff.

In order to learn whether the prevalence of the various agencies, particularly *A. mellea*, was the same in the northern or pole blight area as in the area south of Bovill, Idaho, the trees in Group 2 were placed in these two categories (Table 2). In the northern grouping, out of 428 dead trees examined, 298 trees or 69.6 percent were heavily infected with *A. mellea*. Of the 106 dead trees recorded in the southern grouping, 64 trees or 60.4 percent showed heavy infections of the honey mushroom. Although the figures show a greater prevalence of the fungus in the pole blight area, the difference probably is not significant and additional surveys may be needed to clear this point.

Poria subacida infections were recorded for the northern area grouping and none for the southern. However, this fungus is common on conifers in the areas south of Bovill as attested by an examination of the stumps on cutover land.

No appreciable difference in primary beetle attack was noted on the trees examined, but the trees showing sapstain fungi and miscellaneous agencies were in much greater percentage in the southern grouping.

Although it has been shown that the honey fungus was found in 67 percent of the 578 dead trees, the data are not to be interpreted as representing the average incidence of infection in the western white pine type. The trees in some areas appear to be more susceptible to attack than in others and the loss figures are therefore greater in such localities. Additional surveys should yield a more reliable average but it will, no doubt, be a moving average representing yearly fluctuations due to the large number of factors present.

While we find the signs of the honey fungus with increased frequency associated with white pine trees showing pole blight symptoms, we also find them commonly associated with other conifers having dwarfed needles and internodes, yellow to reddish-brown needles and resinosis of the lower trunk.

Discussion

These field records, although incomplete, serve to emphasize the prevalence of the more common biotic agencies on recently killed trees. While the honey fungus appears to be the most prevalent, isolations of organisms made from heavily blue stained areas of the root collar and roots of the dead trees shows a large number of these fungi to be species of Leptographium found in both the northern or pole blight areas and the southern areas which are free of pole blight.

Of the abiotic agencies such as drought, soil moisture, freezing heat, fumes, drowning of roots, numerous injuries, etc., we have little positive evidence to connect these with the death of the trees studied. One or more of these agencies may have played a part in weakening the trees to a point where the biotic agencies, such as fungi or insects, took over and were, apparently, responsible for death.

The records presented, however, serve to bring clearly to the attention of foresters the marked prevalence in the white pine type of the fungus we recognize as *A. mellea*. It is abundant in all areas and on all tree species, including the broadleaf species. Since its life history (*4*) differs radically from most of the fungi attacking conifers in the area studied, its ability to spread by means of rhizomorphs from decaying stumps, roots and other parts of the dead tree to attack nearby living trees is not fully appreciated. Although it has not been proved by control tests that

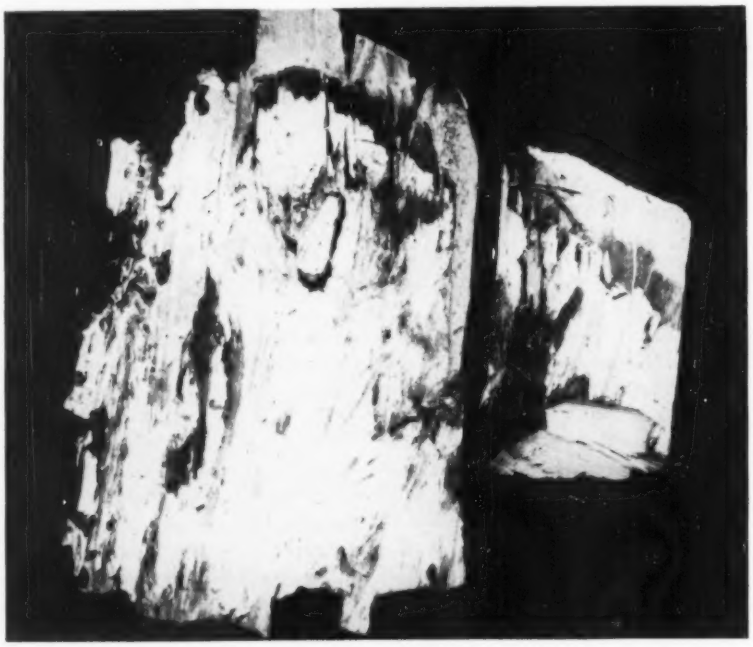

FIG. 1.—*Left:* Inner surface of bark from an *Armillaria mellea* infected Douglas fir. Note white radiating mycelial mat at the upper end and ahead of which is a dark brown zone of discolored cambium. *Right:* White mycelial mat and discolored zone on the sapwood which previously was in contact with the bark. The tree was examined in the fall of the year in which it died and showed heavy resinosis on the lower trunk issuing from the bark cracks, shortening of needles and internodes of the upper crown, but no flat faces or sunken areas such as are typical for pole blight trees.

this fungus can parasitize conifers in this area by direct attack on living roots, its development in living bark, the evident girdling action upon a heavily infected tree, the sudden death of the tree, and the very common occurrence on trees of all ages point strongly to some form of parasitic attack. The fungus is generally known to be a facultative parasite. Some evidence of this type of attack is shown in Figure 1 where the living inner bark tissues and the cambium are being invaded by the fungus. The dark band ahead of the advancing mycelial mat indicates that the effect upon the host tissues is well in advance of the mat. The tree from which this bark sample was taken showed heavy resinosis of the bark well above the highest extent of the mats in and beneath the bark.

It has been noted by Day (*3*) that field evidence and laboratory studies of sections cut through rhizomorphs and bark point to the successful attack by the honey fungus on living roots of pine, western redcedar, hemlock, larch, Douglas-fir and Lawson's cypress by means of the rhizomorphs. Direct infection experiments were not made.

It is surprising that so little has been done to determine whether the honey mushroom can infect a healthy tree through uninjured root tissues, for it has produced a disease which is widespread and apparently quite destructive. It has been present in the western white pine type since early days and is, therefore, not a new menace, yet at the present stage in the management of western white pine and its associated species we are still unable to formulate a positive answer as to the parasitism of the honey mushroom.

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Coming Events

S.A.F. Annual Meeting

The Society of American Foresters will hold its annual meeting, with the theme of "Nature on Edge", September 14-17, in Colorado Springs.

C.I.F. Annual Meeting

The Canadian Institute of Forestry will hold its annual meeting, with the theme of "The Forest Situation in Canada," October 19-21, in Winnipeg, Manitoba.

New York S.A.F. Section Meeting

The summer meeting of the New York Section will be held in the eastern Adirondacks, September 10-11.

According to Fred E. Winch, Jr., Section chairman, the theme of the meeting will be the management of white pine.

American Forest Congress

The American Forest Congress of the American Forestry Association will meet in Washington, D. C., October 29, 30 and 31.

Central States Section S.A.F. Meeting

The annual meeting of the Central States Section will be held at Oregon, Illinois, 90 miles west of Chicago on October 12, 13, and 14. A day and a half tour of Sinnissippi Forest, a private ownership of 2,700 acres under intensive management, preceded by an evening meeting on October 12 is planned.

The program chairman is Dr. J. Nelson Spaeth, University of Illinois, Urbana.

American Institute of Park Executives

The American Institute of Park Executives will meet September 13-18 in Denver, Colorado. Executive Secretary, Emile Mardfin, 30 N. LaSalle Street, Chicago 2, Illinois.

Mid-Century Conference Resources for the Future

Resources for the Future, Inc., will hold its "Mid-Century Conference" in Washington, D. C., December 2-4.

Western Forestry and Conservation Association

The Western Forestry and Conservation Association will hold its 44th forestry conference and annual meeting, Seattle, Washington, December 8-12.

The Cherokee Indian Forest of the Appalachian Region

Elmer J. Carlson[1]
Forest manager, Cherokee Indian Agency, Cherokee, N. C.

MANY people believe that the lands of the United States were acquired by purchase or treaty from Britain, Spain, France, Mexico, and Russia, and that for all lands so purchased we paid about 50 million dollars out of the federal treasury. This is an oversimplification of a complicated situation.

For instance, when we paid Napoleon $15,000,000 for the famous Louisiana territory, we received only the right to govern and tax. It was not real estate. This area had to be obtained from the Indians by more than 375 treaties. In these treaties we paid the Indians over twenty times the amount paid Napoleon; and not all such treaties turned out satisfactorily. There were many errors made in which the Indians lost through ill advised head men and commissioners. When Indian tribes entered into treaties with the U. S. they retained certain areas which later became Indian reservations; these areas are in most cases held in trust by the federal government and it is the duty of the Department of Interior to administer them.

Without going into detail, the administration of a reservation has a relationship similar to that of a governor and his state, the governor being the superintendent, and heading up all departments such as health, education, roads, forestry, and extension. In some cases the Indians did not retain large enough areas and sufficient resources to support their tribes. For example, the Sioux used the western plains for their livelihood, but could not support themselves on only five percent of that area. They had to change their ways of making a living. The Indian Service, in trying to help the Indian live with his white neighbor, often profoundly changed the Indian's former way of life.

Reservations are established by treaty, by Presidential proclamation, or by purchase of land. The Cherokee Reservation was acquired by purchase.

In our early history all Indian reservations were under the War Department, until 1850, when they were placed under the Department of the Interior.

Forestry on a Reservation

An Indian reservation is land held in trust for a group of Indians; it is not the property of the entire nation, as, for example, a national forest. The timber on an Indian reservation is property held in trust by the United States for the sole benefit of the Indians, and remains in this status until the Indian shows ability to administer his own property. Hence, certain management plans that might be quite appropriate on a national forest, as, for example, the costs of expensive methods of regeneration which are assumed by the general public, would be entirely unappropriate on Indian owned forest.

On an Indian reservation, all sales of forest products must be made under certain acts of Congress. Some laws date back to 1854. Until 1910 the Indian Service relied on the Forest Service for advice. Such men as Frothingham, Zon, Ashe, Cox, and Peters were advisors.

From the early days, practical considerations have influenced the management policies of most Indian forests, and to some extent they do today. When an Indian is hungry he reacts the same as a white man; he will cut his last tree for bread when there is no alternative. A foremost objective in the management of the Cherokee Reservation is to build up the productive capacity of the forest by effective protection, by preventing clear cutting, and by adequate provisions for regeneration when timber is cut. Our goal is sustained yield management.

A law called the "Allotment Act" in 1880 did much to hamper good forest administration. This act was supposed to be a cure-all for the Indians. It subdivided the reservation, giving each enrolled Indian a parcel of land, ranging from a few acres to a section, depending on the reservation and tribe. The Indian received a trust patent for his allotment of land for a period of 25 years at the end of which time he was supposed to be competent to handle his affairs and would be given a fee patent. When this was received he could do as he wished with his land. In many cases he sold it. If timbered it usually was logged off by the new purchaser. Many Indians did not sell. The ownership pattern is a checkerboard.

Not all reservations were allotted, but in those that were each allotment is treated separately. This makes for complicated administration for a forester in the Indian Service. When a timber sale, covering a number of allotments, is made on an allotted reservation one contract can cover all, but each allotment is accounted for separately, though the sale may cover several hundred. No sales are made without the Indian's consent. Though there may be fifty heirs, each heir is credited with his share. If the reservation is not allotted, then the timber sale is handled much as on a national forest, but the receipts are credited to the tribe. From this fund the Indians may elect to make a per capita payment, use it for the relief of their own people, or invest the money in projects bringing the tribe more profit.

Under the Indian Reorganization Act each tribe manages its own business, other than that pertaining to natural resources. These are controlled by the Secretary of the

[1]This article represents the author's views only, and is not to be regarded as an official expression of the attitude of the Indian Service on the subject discussed.

Interior through specific acts of Congress.

Forestry on the Cherokee

This brief background pictures some of the problems of the Indian Service Forestry Division. Now, about the Cherokee Reservation in North Carolina. (The main tribe of Cherokees is in Oklahoma, but this paper concerns only those in North Carolina.

On this reservation are some 2,900 Indians living on 56,550 acres of land in Swain, Jackson, Graham, and Cherokee counties—about 27 people per square mile. Of this area 47,800 acres are classed as forest land, leaving 5,000 acres for farming and 4,000 acres for grazing, or 3.2 acres per person for agriculture. Fortunately, all are not dependent on agriculture for a living. The gross income from agriculture is $500,000; that from forest products, including domestic use, is over $300,000. The area contains about 480 tracts of varying acreage, called holdings.

In 1915 and 1916 the Indian Service made a timber cruise on 34,000 acres preparatory to an extensive timber sale, but owing to the complicated land status the sale was not consummated. The cruise showed 107 million board feet on 60 percent of the area. The area not cruised included the heavier populated section, and little timber was to be found there other than pole size, which at that time was not intended for sale. Of the 107 million feet, 62 percent was chestnut; the remainder, about 40 million feet of mature hardwood and softwood. A small amount was cut by individual Indians along the Parson Pulp Company railroad operating through the reservation, a few poles were taken out, and some cutting was done for domestic use. During the fifteen years following the cruise the cut was unimportant. Not until after 1930, when gasoline trucks came into use, did any considerable volume of timber leave for the market.

From 1930 to 1944, 145 million board feet were sold and removed from the 47,000 acres. Of this amount 80 percent was cut between 1934 and 1942. This sudden increase was the result of the C.C.C. truck trails constructed for forest protection purposes, thereby affording an opportunity for the Indian without capital to enter into the logging business. The cut exceeded the growth as estimated by the Southeastern Forest Experiment Station—67 board feet per acre.

Section 6 of the Act of June 6, 1934, known as the "Indian Reorganization Act," requires that the Secretary of the Interior make rules and regulations for sustained yield forest management. The Cherokees were not committed to this policy until 90 percent of the virgin stand had been cut. During the period 1930 to 1940, much of the mature timber was removed from the individual tracts or "holdings," leaving a stand of trees below 16 inches d.b.h. and averaging less than 2 M board feet per acre.

The Indian who participated in the logging of this period just about converted himself from a farmer to a logger. After cutting all trees 16 inches d.b.h. and larger from his holding, he began taking the undersize trees for domestic use, and pulpwood from the pole-size stand. If he were primarily a logger, and did little farming, his holding is now practically barren, and his timber growing stock is of low grade, if he has any. The Indian who did little logging still has his mature timber as well as good growing stock. The result is a very uneven forest stand on the reservation.

Status of Holdings

The size of an individual holding varies from a one-acre house lot to 700 acres of forest land. These holdings have a peculiar status. A member of the band holds only a possessory right. He owns his personal possessions, such as buildings and fences, but the timber is held as tribal property. He has a right to sell his possessory interest to another member of the tribe. He may lease his land and buildings for five years to an outsider or white, but the time limit is established by an act of Congress. These regulations and others are set up by the General Council, and affect all the Indians' business other than that pertaining to natural resources which are otherwise controlled.

The tribal officers consist of a principal chief and vice chief elected by members of the band for a period of four years, and twelve council members representing the six townships for a period of two years. This is the governing body which has the power to transact business under a charter issued in 1889 by the State of North Carolina.

Although the Cherokee does not have a deed for his holding he cherishes his right of occupancy. In the past he bought and sold the timber on his holding without restrictions. He thinks of the timber as rightfully belonging to him, although he pays a stumpage to the tribe even when he cuts from his own holding. Since the timber is actually tribally owned, he is committed to sustained yield by tribal policy. The Indian Service recognizes his holding as tribal property, and a quota is set for cutting and selling.

The Service determines the volume to be cut and sold, based on the estimated growth of the entire forest. The individual, whether he claims 700 acres or 20 acres, is allocated a specific volume of timber to cut each year above a minimum diameter limit. If he has no timber over 16 inches d.b.h. he does not cut any. If he has a million feet of merchantable timber he will only cut that volume allocated to him. The system of allocating the volume of timber for cutting began in 1941.

Since the individual Indian is permitted to cut his quota only if his holding contains mature timber, when he has none he may request permission to clear off "new land" or enlarge his pasture, from which he can salvage pulpwood. Thus the intent of sustained yield management is circumvented. Since, if this practice were continued it

would in time exhaust the growing stock, examinations are made of areas before granting permission to clear. If an area meets with the requirements of the tribal Soil and Moisture Conservation Organization, the holder is given permission to cut and clear the land, and the area is deducted from the forest acreage and designated as agricultural land.

There is no difference between the Cherokee and the mountain white of the Great Smokies. The latter for many years has reached out for new land and abandoned fields to natural reproduction. This change over occurred every fifteen to twenty years, about as long as it takes to grow pulpwood. Of course, the Cherokee may not use his new cut-over area for pasture or crops, and in fact, may not have intended to do so. The Indian Service cannot deny him the chance of a better livelihood if he desires to convert forest to farm land.

Related Problems

On the basis of 67 board feet or less timber growth per acre compared to 15 or 50 bushels of corn per acre, the Indian would receive a greater return from farming. But farming introduces the problem of erosion control.

As with most programs for improved land use, regardless of the people involved and despite the fact that the purpose is for their own good, the obstacles encountered are not in the application of technical knowledge but rather in personal resistance or indifference. The Cherokee Indians are no exception.

They dislike cutting regulations. If an Indian's holding is small, he is inclined to cut into his growing stock especially if he needs wood for domestic use. With changes in ownership, the new owner may not have the same attitude toward the management of timber as the former holder; consequently, in property transfers a stipulation on restriction of cutting would be beneficial. Finally, farmers frequently change their farming practices which often result in damage to the forest growing stock.

We can expect some, but not much, increase in annual growth on the reservation through better forest practices. The simple fact is that the Indians are so dependent on the forest for part of their livelihood that excessive cutting will probably continue.

Other sources of increased income, in addition to farming and the tourist trade, are needed. More outside small industries would help, because ample manpower is available. It is the natural resource that is limited.

Conclusion

The Forestry Division of the Cherokee Indian Agency is working to protect the forests for future generations and make possible the rehabilitation of cutover lands. For every acre of land cleared for pasture the forest is diminished. Unless forestry is practiced and the people have the willingness to seek other sources of income, the economic value of the forests to the Eastern Band of Cherokee Indians may sharply decline within a short time.

Those concerned with the problem hope that the tribal officials will recognize the value of their forests as an economic factor in their livelihood and protect it.

Next issue.—The October issue will carry a photograph and a short biography of each person nominated for Council or President.

Chemical Control of Buttercup on Mountain Meadows

Donald R. Cornelius and Charles A. Graham

Range conservationists, California Forest and Range Experiment Station, Berkeley, Calif.[1]

PLANTAINLEAF buttercup (*Ranunculus alismaefolius* Geyer) is widely distributed in the mountains of the United States. The plants thrive on moist meadows and use considerable water in the spring, competing strongly with more desirable forage species. In early summer plantainleaf buttercup matures, dries up, and the top growth virtually disappears before the middle of the grazing season. Low forage production and low palatability make plantainleaf buttercup an undesirable forage plant. When buttercup becomes a significant component of the vegetation, the grazing capacity of the range is reduced.

That plantainleaf buttercup is susceptible to the herbicide 2,4-D (2,4-dichlorophenoxyacetic acid) was indicated by results of initial tests by Hormay and Blanchard[2] in 1946. Susceptibility was also demonstrated by a test started in 1948 with applications of 2,4-D at relatively heavy rates.[3] Consequently, more detailed experiments were started in 1949 to help determine the best rates, carriers, and forms of 2,4-D, and time of application for control of plantainleaf buttercup. Results of these two tests through 1950 have shown not only that this range weed is susceptible to the herbicide, but also that the more desirable vegetation responds satisfactorily after spraying; further, the results indicate the most efficient procedure for applying the spray material.

Plan of Experiment

The meadow on which the spraying was conducted is located on the Lassen National Forest in northeastern California, at an elevation of 5,600 feet. Mountain meadows in good condition have the highest capacity for producing forage of any of the range types in that area. When such meadows are grazed too heavily and deteriorate to poor condition, the density and vigor of desirable forage plants decline, and unpalatable weeds such as plantainleaf buttercup increase.

The area selected for this test is typical of a considerable acreage of the mountain meadow land of northeastern California. The meadow is partially submerged through much of the spring during snow melt. The gradient is slight, and soil moisture remains at a high level until mid-summer. In late summer and autumn the soil dries and cracks in places. The soil is 2 to 3 feet deep, a dark brown loam, high in organic matter, and derived from basaltic rock. Plantainleaf buttercup made up more than half the weed population and was the only weedy species distributed over the entire meadow.

In 1948, two plots, each 60 feet by 300 feet, were sprayed at the rate of 3.3 pounds of the butyl ester of 2,4-D in 10 gallons of diesel oil per acre. These plots will be referred to later as the 1948 plots. A 10-foot boom-type sprayer, operated by a ¾ horsepower gasoline motor in the bed of a pick-up, was used throughout the experiments.

Seven different treatments were applied in 1949 on plots 20 feet by 300 feet in size. The plots were laid out in duplicated block design with a check or untreated plot between each pair of treated plots. Treatments were applied to compare the effects from (1) the alkanolamine salt and butyl ester form of 2,4-D; (2) 1- and 2-pound rates of 2,4-D acid equivalent per acre;[4] and (3) water, diesel oil, and water-diesel oil emulsion as a carrier for 2,4-D. Plots were treated at the early-bloom (May 20) and late-bloom (June 20) stage of development of the buttercup to determine the best time to spray.

Density and botanical composition were determined in 1950 by the point-quadrat method of sampling as developed by Levy[5] and described by Tinney, Aamodt, and Ahlgren.[6] This method makes use of a frame which guides 10 steel pins vertically through the vegetation. Each leaf touching a pin is recorded as a strike for that species. If several different species touch a single pin or if several strikes are made against a pin by a single plant, all are recorded as strikes. This point-quadrat method measures the relative amount of vegetation for the various species.

Herbage yield was obtained by using a mowing machine to cut 6- by 20-foot sample units, 9 from each plot. The cutter bar was equipped with a piece of canvas to catch the vegetation. Yield of herbage was determined on a field-weight and oven-dry basis.

Changes in Botanical Composition

Grasses increased as the buttercup was reduced by spraying with 2,4-D. On the 1948 plots, great changes in the percentage composition between grasses and weeds appeared in the first year after treatment. The increase in grass during this time compensated for the noticeable decrease in buttercup, other weeds, wire rush, and Douglas sedge. Therefore, at the end of the first year after spraying the per-

[1] Maintained by the Forest Service, U. S. Department of Agriculture, at Berkeley, in cooperation with the University of California.

[2] A. L. Hormay and R. K. Blanchard, Divisions of Range Research and Fire Research, respectively, California Forest and Range Experiment Station.

[3] Cornelius, Donald R. and Charles A. Graham. Selective herbicides for improving California forest ranges. Jour. Range Mgt. 4(2):95-100. 1951.

[4] To determine 2,4-D acid equivalent, take 65 percent times the weight of the alkanolamine salt or 80 percent times the weight of the butyl ester.

[5] Levy, B. Technique employed in grassland research in New Zealand. Imp. Bur. Plant Gen., Herbage Plants, Bul. 11. 1933.

[6] Tinney, Fred W., O. S. Aamodt, and Henry L. Ahlgren. Preliminary report of a study on methods used in botanical analyses of pasture swards. J. Amer. Soc. Agron. 29(10):835-840. 1937.

centage of ground covered by all species of plants taken together was not significantly different between treated and untreated plots.

In the second year after spraying, both density and yield of vegetation were greater on the treated plots. The grass had increased until there was over seven times the amount on sprayed as on unsprayed plots (Fig. 1). Plantainleaf buttercup made up 20.0 percent of the vegetation on unsprayed plots and only 0.5 percent on sprayed plots.

The increase in grass came about by tillering or by other means of vegetative spread. The individual plants or clumps of grass were taller and leafier. No grass seedlings were observed. The most important grasses occurring in the meadow were long-lived perennials such as Nevada bluegrasses (*Poa nevadensis* Vasey), leafy redtop (*Agrostis diegoensis* Vasey), California oatgrass (*Danthonia californica* Boland), and mat muhly (*Muhlenbergia richardsonis* [Trin.] Rydb.). Other perennial grasses found in minor amount were tufted hairgrass (*Deschampsia caespitosa* [L.] Beauv.), Kentucky bluegrass (*Poa pratensis* L.), and prairie junegrass (*Koeleria cristata* [L.] Pers.). Two annual grasses making a minor part of the vegetation were annual hairgrass (*Deschampsia danthonoides* [Trin.] Munro) and pull-up Muhly (*Muhlenbergia filiformis* [Thurb.] Rydb.).

Douglas sedge and wire rush were common. Both were affected by the application of spray and were reduced from 24.4 percent of the vegetation on unsprayed plots to 1.6 percent on sprayed plots (Fig. 1).

Seventeen different species of weeds were found in the meadow, including knotweed (*Polygonum bistortoides* Pursh.), common camas (*Camassia quamash* [Pursh.] Greene), aster (*Aster foliaceous* Lindl.), and hog fennel (*Lomatium plummerae* C. & R.). Although these weeds were reduced in density by spraying, the individual species were so scattered and erratic in occurrence that relative susceptibility could not be evaluated for each species from the results of this test.

Clovers are a desirable forage plant generally considered susceptible to killing by 2,4-D. On the meadow selected for these tests, a native clover (*Trifolium longipes* Nutt.) was encountered in sampling one treated and one untreated plot. The amount of clover was so slight, however, that an accurate determination of susceptibility of this legume cannot be made from these experiments.

Influence on Forage Yield

The second year after spraying, grasses became vigorous and forage production was markedly greater on treated than on check plots (Figs. 1 and 2). Increased herbage

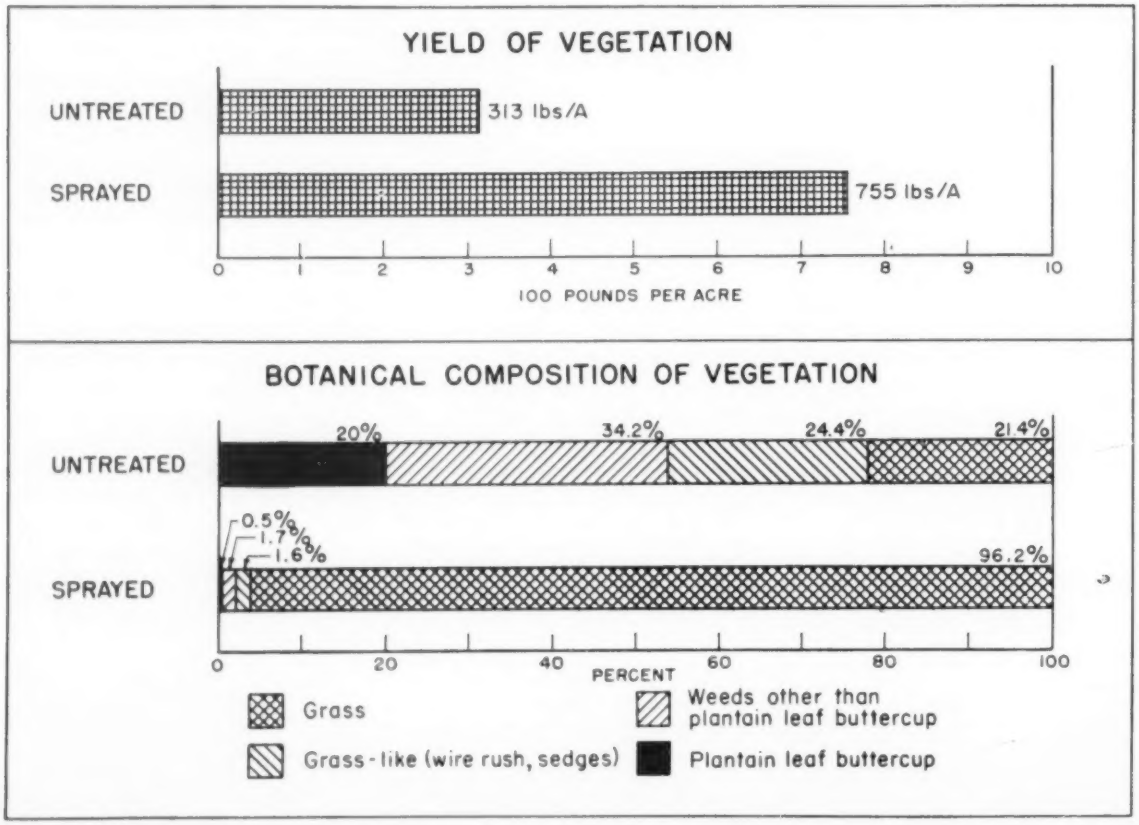

FIG. 1.—Botanical composition and yield of vegetation in 1950, from untreated plots and from plots sprayed with 2,4-D in 1948 for control of plantainleaf buttercup.

production was not obtained in the first year following treatment. For example, when the 1948 plots were sampled in 1949[7] there was no significant difference in weight of herbage produced by sprayed plots and untreated plots. In contrast, vegetation harvested in 1950 from sprayed plots was 755 pounds, field weight per acre, compared to 313 pounds from untreated plots. Moreover, the vegetation from the sprayed plots was superior forage. The yield of plantainleaf buttercup, other meadow weeds, and wire rush and Douglas sedge was greatly reduced by spraying with 2,4-D. Grasses, uninjured by the selective herbicide, increased markedly in yield.

When reduced to oven-dry condition the comparative yields in pounds per acre were 467 on sprayed plots and 145 on unsprayed plots. These yields, obtained by use of the tractor-operated power mower, represent about what could be expected with full utilization of the forage by proper grazing. A stubble varying from 2 to 3 inches in height was left, which is more than is usually left on plots hand clipped for total yield determination. Thus yields expressed here should be considered available forage, which is always less than total yield.

Application of Herbicide

Form of 2,4-D.—The alkanolamine salt of 2,4-D gave better control of the plantainleaf buttercup than the butyl ester formulation, for both the 1- and 2-pound rates (Table 1). The alkanolamine salt formulation gave 100 percent kill at the 2-pound rate. Two advantages may be claimed for the alkanolamine salt over the butyl ester form: (1) The salt form is less volatile, therefore drift to susceptible vegetation on nearby areas is less hazardous, and (2) the cost per pound of 2,4-D acid is less. On sedge (*Carex douglasii* Boott.) and wire rush (*Juncus balticus* Willd.), the butyl ester was slightly more effective than the alkanolamine salt form.

[7]See footnote 3.

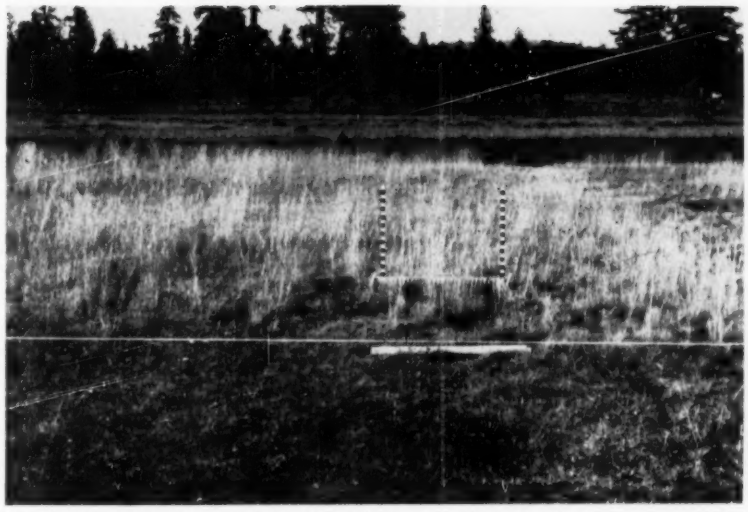

FIG. 2.—Spraying with 2,4-D killed plantainleaf buttercup and other weeds, giving native grasses a chance to increase on the plot behind the white line. Low production in foreground on untreated plot is the result of heavy infestation of plantainleaf buttercup and other weeds. Photographed in August, 1950, spray applied in 1948.

Rates of applying 2,4-D.—Two pounds of 2,4-D per acre gave better control of plantainleaf buttercup than 1 pound per acre (Table 1). This superiority of the 2-pound rate occurred for both formulations of 2,4-D, the alkanolamine salt and the butyl ester. Such differences did not occur between the two rates of application in control of other weeds occurring in the meadow.

Kind of carrier.—Three kinds of carriers were used in applying the butyl ester of 2,4-D at 1 pound per acre on June 20 (Table 2). Ten gallons of diesel oil was the best of the three in these treatments. A mixture of 9½ gallons of water and 2 quarts of diesel oil was second. An aqueous solution gave the least control. Judging from these three treatments alone, the use of diesel oil as a carrier would be warranted. The highest percentage kill of buttercup, however, was with 2 pounds of the alkanolamine salt in a mixture of 9½ gallons of water and 2 quarts of diesel oil per acre (Table 1), and this treatment was also less expensive.

Stage of growth.—Spraying at time of late bloom (June 20) killed much more plantainleaf buttercup than spraying on May 20 at early bloom stage (Table 3). Another point in favor of spraying when buttercup is at the late bloom stage is the more favorable condi-

TABLE 1.—CONTROL OF PLANTAINLEAF BUTTERCUP WITH ALKANOLAMINE AND BUTYL ESTER FORM OF 2,4-D[1] AS SHOWN BY NUMBER OF STRIKES

Formulation	Rate per acre 2,4-D, lbs. acid equivalent	Amount of buttercup, strikes per 120 pins	Percentage of check (unsprayed)
Alkanolamine	1	9	5.8
Alkanolamine	2	0	0.0
Butyl ester	1	14	9.0
Butyl ester	2	9	5.8
Check (unsprayed)	None	156	100.0

[1]Carrier included 9½ gallons water and ½ gallon diesel oil per acre.

TABLE 2.—COMPARISON OF THE EFFECT OF THE CARRIER UPON THE CONTROL OF BUTTERCUP WHEN USED WITH 1 POUND OF 2,4-D PER ACRE

Kind of carrier	Number of buttercup strikes per 120 pins	Percentage of check (unsprayed)
Water	22	14.1
Oil	8	5.1
Emulsion: water and oil	14	9.0
Check (unsprayed)	156	100.0

TABLE 3.—COMPARISON OF CONTROL OF PLANTAINLEAF BUTTERCUP WHEN SPRAYED AT EARLY BLOOM STAGE (MAY 20) AND LATE BLOOM STAGE (JUNE 20) WITH 1 POUND OF 2,4-D PER ACRE IN 10 GALLONS OF WATER AS CARRIER

Stage of plant development	Number of strikes per 120 pins	Percent of check (unsprayed)
Early bloom	42	26.9
Late bloom	22	14.1
Check (unsprayed)	156	100.0

tion of the meadows at that time for ground application. When buttercup is in the early-bloom stage, the meadows are usually too wet for efficient operation of ground-type spraying equipment. A third advantage for application at the late-bloom stage is that this is also the best time for spraying sagebrush (*Artemisia tridentata* Nutt.), another important noxious plant that can be controlled by 2,4-D.[8] Both plants are frequently found on the same grazing area; sagebrush occurs on the drier, better-drained sites, buttercup in moist meadows. Sometimes, therefore, both plants can be treated effectively in one operation.

Summary and Conclusions

Tests conducted on a mountain meadow in northeastern California showed that plantainleaf buttercup is susceptible to the selective herbicide 2,4-D.

Production of meadow vegetation, dry-weight basis, was increased three-fold in the second year after spraying with 2,4-D for control of weeds. Native grasses increased in density and yield. Buttercup and other weeds which were susceptible to 2,4-D decreased.

A comparison in control of buttercup was made for two forms of 2,4-D, two rates of application, three kinds of carrier, and two growth stages of the buttercup for the time of application. Two pounds of the alkanolamine salt of 2,4-D in 9½ gallons of water and ½ gallon of diesel oil per acre, applied when plantainleaf buttercup was in late bloom, gave the best control.

Many depleted meadows have some remaining grass, but forage production is low because of infestation by weeds. On such areas the use of chemical spray offers an attractive method of meadow improvement.

[8] See footnote 3.

S.A.F. Consulting Foresters List to be Published in January JOURNAL

November 1, 1953 is the deadline for consulting foresters to apply for listing in the Society of American Foresters' List of Consulting Foresters which is to be published next in the January, 1954, JOURNAL OF FORESTRY.

Minimum requirements for listing are membership in the Society and the designation of fields of specialization commensurate with the consultant's training and experience as shown in the official Society records.

Consulting firms will be listed if one or more of the partners or employees are members of the Society and capable of performing the services offered. In such cases, those individuals' names will appear in the listing.

Persons and firms in the S.A.F. List of Consulting Foresters which was published in the January 1953 JOURNAL will be contacted by mail to obtain corrections or revisions of their listings.

Members who are doing consulting forestry work and who have not been listed previously are invited to apply for inclusion in the S.A.F. list. They should provide complete information concerning address, specialization, and territory served, following the form used in the List of Consulting Foresters published in the January 1953 JOURNAL OF FORESTRY. A limited number of reprints of that list are available for free distribution.

November 1, 1953 is the last date on which listings will be accepted for publication in the January 1954 list.

The Gold Coast—A Supplier of Mahogany

E. P. Furlow[1]
Virginia Forest Service, Charlottesville, Va.

Although mahogany, the unusual wood with so many diversified uses, is exported commercially to the United States from Central and South America, from the Caribbean countries, and from Africa, by far the largest single source in recent years has been from the African Gold Coast. Frequently since the end of World War II, the United States has procured more mahogany annually from the Gold Coast than from all other sources of supply combined.

THE GOLD COAST, a British Crown Colony, is located in West Africa on the Gulf of Guinea and is surrounded on three sides by French territory. Its size of about 91,800 square miles approximates the combined area of Alabama and Kentucky.

The country can be divided into three geographic regions, the coastal scrub land, the forested area which lies in the west and south, and the rolling open parklands of the north. The drainage of the country is poor, although there are numerous abrupt low hills, and there are no important navigable streams.

The climate is not unbearable, its worst feature being the high relative humidity. Clothing rots and leather goods turn green almost over night. The chilliness and dampness of the rainy season is far more annoying than the heat of the dry season.

There are two rainy seasons—the principle one in May and June and a lesser one in October and November. The forests are frequently too wet for full-scale logging operations from May through December. The annual average rainfall varies from over eighty inches in the western coastal area to 30 to 50 inches along the eastern portion of the coast.

Economic Importance

The Gold Coast is of primary importance to Great Britain, and of great strategic significance to the United States. The major export items are cocoa, gold, manganese, and timber—all are "dollar bringers." Since in recent years more cocoa, manganese, and timber have been shipped to the United States than to any other destination, the Gold Coast is one of the more important sources of dollars for the British. It ranks third in the world's production of manganese, and produces over 35 percent of the world's cocoa. Its timber production, which is mainly mahogany, ranks only fourth in value among its exports, but is the major single source of mahogany for the United States.

Population

The natives of the Gold Coast are Negroes. They refer to themselves not as Negroes or colored people, but as Africans. All people of the white race, whether Europeans or Americans, are called Europeans.

The population, which is a little above four million people, has increased by about 30 percent since 1931 with the number of Africans in the larger cities nearly doubling. At present the non-African population is about 6,500. In 1948 there were approximately 126 Americans living in the Gold Coast.

The colony has only four cities with 20 thousand or more inhabitants, including both Africans and non-Africans—Accra, Kumasi, Takoradi (including Sekondi) and Cape Coast.

Takoradi (including Sekondi), with an African population of around 44,000 and a European population of a little over 800, is the fast growing commercial center of the country because it possesses the only deep-water harbor in the Gold Coast.

Transportation and Communications

For a tropical country the Gold Coast has comparatively good roads. Even though they are not designed for heavy duty, there are several leading from the forest areas to the harbor at Takoradi that carry trucks loaded with 10 to 15 tons of logs. Out of the six thousand miles of roads passable to ordinary passenger cars during the dry season, only about 700 miles have tarred surfaces. Some of the newer dirt-surfaced roads are superior, in the dry season, to some of the hard-surfaced ones.

The most serious drawback of the Gold Coast roads is the road net itself. There are more or less direct routes of travel between the three important cities—Accra, Takoradi, and Kumasi, but the roads inland tend to wander back and forth over the countryside and frequently there are no direct routes of travel between larger inland towns. This situation seriously limits the road hauling of logs from the eastern part of the country.

Road hauling of logs can sometimes be carried on during the rainy season though haulage on untarred roads is then hazardous and often impossible. The rains are frequently accompanied by high winds and it is not uncommon to have windfalls stop all road traffic temporarily.

The railroads of the Gold Coast are a great asset to the country even though they are narrow-gauged and total mileage little less than 540 miles. They carry the bulk of the cocoa, manganese, timber, and bauxite to the harbor and, operating under adverse conditions, do a surprisingly good job.

The colony is well served by air. Two flights each week arrive from and depart for the United States and excellent service with the United Kingdom, the Continent, and other points in Africa exists. There are frequent domestic flights between the three principal towns. There is regular steamship service with the major ports of the world.

Land Ownership and Timber Concessions

Ownership of most of the land throughout the forest regions is

[1]Formerly West African representative, Fordom Forest Products Corp.

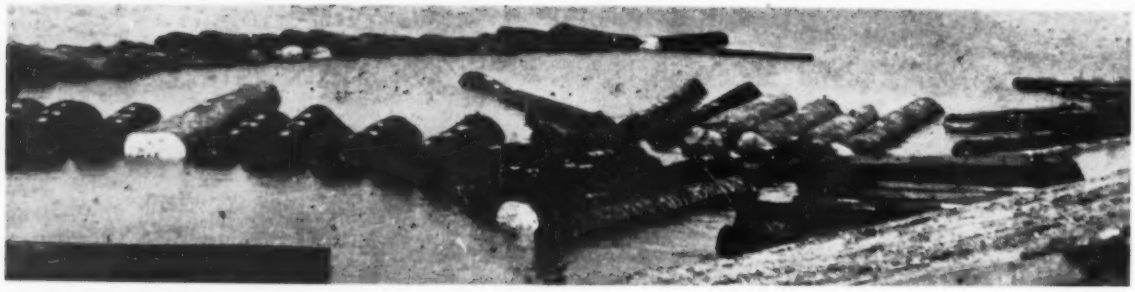

FIG. 1.—Gold Coast logs being cabled together in Takoradi harbor prior to towing to a ship.

held by the Africans themselves, either by their tribal Stools, families, or individuals. The term "Stool lands" has the same general significance as the English term "Crown lands." The transfer of rights with respect to land, minerals, timber or other products of the soil for any purpose from an African to another African or to a non-African is closely controlled and regulated by the government.

When a firm, African or non-African, wishes to cut mahogany or trees of other species it is necessary to obtain a concession from the owner. Anyone is eligible to enter into a concession agreement, but when the concession is being given from an African to a non-African the agreement must be in writing and must comply with the rules and regulations of the Concessions Ordinances. There is no size limit for a concession and the time limit is ninety-nine years. The Gold Coast Forestry Department has absolute control over the timber concessions, and the cutting and logging done must comply with their regulations. Often concessions will be sub-leased, and simple felling agreements for a period of one or two dry seasons are frequently made.

Exports of Mahogany Logs

The volume of logs exported from the colony in recent years has increased tremendously. During the years immediately preceding World War II, the average annual export to all destinations amounted to a little less than a million cubic feet. This doubled during World War II. Post-war exports continued to increase from a low in 1946 of about 3.3 million cubic feet to a high in 1950 of over 8 million.

Although more mahogany has been exported annually than any other species, the percentage of mahogany exported in relation to the total volume of logs exported each year has been declining steadily. This is true even though the actual volume of mahogany logs exported has on the whole, increased. The major reason for this is that many more of the Gold Coast secondary species are being utilized. In 1937 only five different species of logs were exported, in comparison to about 19 during 1950.

The Gold Coast mahogany actually consists of several species of the Meliaceae family: *Khaya ivorensis*, *Khaya anthotheca*, and *Khaya grandifolia*. All three species are sold as Gold Coast mahogany. The *K. anthotheca* and the *K. grandifolia* are less desirable and whenever possible they are purchased at a discount.

The two secondary species which are the commercially more important in the American trade at this time are avodire (*Turraeanthus africana*), and sapele (*Entandrophragma cylindricum*).

Purchasing

The mahogany market is almost entirely located in Takoradi and, like many other trading centers, has an excess of middlemen. While this situation is not prevalent with the American firms, the middleman problem is typical of African business. This is due in part to the lack of capital in the African firms and to the critical transportation problem. A large number of the African firms have sufficient capital to operate one or two of the several steps in bringing the logs from the bush to the harbor, but lack the timber concessions, or vice versa. Consequently, the man who has the concession and sufficient equipment to cut and to bring his logs to the road side will have to join forces with another individual who has trucks capable of the long haul to Takoradi and the harbor. Sometimes the concession owner is completely without equipment and labor and, in effect, sells stumpage.

Since the railways have been unable to take all offerings of logs made each month, space has had to be allocated. As a consequence, sometimes space has been allocated to a man who does no logging himself and the individual who has logs ready for shipment to market has been denied rail space. One result of this is a "black market" in railroad space—a situation which is deplored by all responsible parties concerned. Ocean shipping space is also critical at times and this also tends to maintain the African middleman.

There is only one American firm of any size that actually has its own concessions, does its own logging, brings its logs to the harbor, and ships them to the United States. The other American firms buy their logs FOB Takoradi. The middleman situation is somewhat different with the American firms. Those that buy logs only for resale in the United States are in the minority. However, those American firms that buy for their own manufacturing use will resell to other manufacturers at times.

Regardless of disposition of their logs in the United States, American firms buy only FOB Takoradi

on the Gold Coast. In this way all expenses and costs of bringing the logs from the interior and loading them on the ship are borne by the seller. The buyer pays only the ocean freight and insurance, plus what other charges accrue before he disposes of the logs in the United States. In contrast to the American firms buying FOB Takoradi, some British firms buy logs in the bush at a road side or rail head. They then pay all costs from the loading point to the point of destination. Certain legal and fiscal considerations make buying FOB Takoradi almost mandatory for American firms.

Most of the American firms procuring mahogany have their buying representatives living in the Gold Coast, incurring considerable expense for housing, transportation, and general maintenance of buyers. Another method is for the American company to deal directly from the United States with the African firm. This method may appear to be economical, and is often successful at first, but frequently the purchase price FOB Takoradi will get progressively higher while log quality will steadily decline.

It might be of interest to mention that the typical American firm has two representatives on the Gold Coast during the logging season (roughly January through May). These men, sometimes accompanied by their families, have tours of duty of approximately one year to 18 months. Paid vacations in the United States consists as a rule of about one month for every four months in Africa. Whenever practical, vacations are taken during the rainy season.

Up until the recent slump, the Americans dominated the mahogany market, and practically all the first and second grade logs went to the United States. British and Continental buyers could not compete with the American prices.

FIG. 2.—Log inspection in the jungle. Compare height of stump to that of man standing on butt log.

To pay for their logs most American firms use either letters of credit or a local checking account. Naturally there are endless variations in the letters of credit used, but the two most efficient and safe are (1) one at a bank in each important timber town in the name of each firm supplying logs, or (2) one in a Takoradi bank in the name of the company representative who will then draw on it for different supplying firms as needed. Either type of letter of credit requires certifying signature of the company representative. While the first type is generally rigid with its specifications for species, dimensions and prices, the second type usually stipulates any supplier, any species, any dimensions, any grades and any prices, and thus is much more flexible, efficient and cheaper to administer. The company representative is expected to put into effect price or quality changes and the home office protects itself by limiting the letter of credit to a maximum sum that can be drawn in a given period, and by frequent expiration dates.

For one reason or another, payment for logs is often made by check. This method is quite satisfactory but requires abnormally large balances in the checking account and additional sums must frequently be transmitted by cable because of unforeseeable demands.

All logs are paid for in British West African pounds (on par with the English pound) regardless of the method of payment. Although American firms pay dollars for the logs they purchase, the African seller himself never sees the dollars, and he cannot legally maintain a dollar balance in the United States. The British Ministry of Finance steps into the transaction by taking over the dollars and giving the African the equivalent in British West African pounds. The British finance authorities are very strict about this and the penalties for violations are quite severe. It expedites the administration of business to pay for each shipment via letter of credit and to have the bank involved certify that the shipment of logs was paid for with

British West African pounds drawn from a dollar account.

Because the African firms operate on very small working capital it is frequently necessary for the buying firms to assist them by making cash advances. This shortage of working capital seems to prevail with all African firms regardless of their size.

Bargaining

It has often been said that everyone loves a bargain—especially if the bargain is in your favor. This is certainly truth in the rough and ready business of the Gold Coast. Because many of the African and some of the European firms are considered untrustworthy and without ethics, business is conducted on a cash and carry basis. This is not the case with the well-established British timber firms. While the British timber suppliers are difficult traders and hard bargainers, they operate ethically. The bulk of the American buying firms operate in a highly competitive manner with considerable shrewdness, and they do so with a minimum of corner-cutting. Those that follow the old maxim "that once out of the United States anything goes," defeat themselves because of their own tactics.

While competition among the American firms is quite high, there is no price-fixing. The British buying firms, however, operate differently and at slower pace. They almost never bargain against another firm for a parcel of logs. Where with the Americans it is the entire parcel of logs or none, the British buyers will split the parcel with another buyer.

Inspection

Units of 40 to 50 logs are usually inspected and bargained for at the same time at a rail head or road side up country. Inspection of logs at the stump, while admittedly very desirable, is quite time consuming and would require a larger staff than that maintained by the American firms at this time. While inspecting for quality, the buyer takes average diameter measurements of the small end and the length of each log. Each log is numbered and permanent records are kept. Gold Coast mahogany logs were formerly squared prior to shipment, but now the practice is merely to cross-cut the rough ends and to debark the logs. The ends of the logs are covered as protection from the sun while waiting for shipment to the harbor.

FIG. 3.—The log markings indicate the African seller (WCS), the region of origin (Y), the number of the tree (36), the number of the cut (— 1), the buyer (FFP), and the destination (USA). See log on extreme right.

Ordinarily an inspection of a single parcel of logs requires from one to two days although the bulk of this time is used in travelling to and from Takoradi and the inspection point.

Grading

The grading rules vary according to many factors, but as a general rule the first grade logs must not measure less than 34 inches average diameter of the small end; second quality logs (often called FAQ—fair average quality) measure from 30 inches up, small end; and third grade logs, if accepted at all, measure from 26 inches up, average diameter at the small end of the log. All grades of logs must be at least twelve feet in length. Of course quality factors have primary consideration in grading logs. Some of factors considered in grading are freshness, knots, splits, cheeks, worm holes, texture, stain, highlights, gum, off and wandering hearts, general form, etc. Care must be taken in inspecting each log for species; it is not unknown in the Gold Coast to have offered for purchase as mahogany one or more of the several species of Entandrophragma.

Log Measure

In the Gold Coast logs are not purchased by American log rules, or by actual weight (i.e., by being weighed locally). Purchase is made on the long ton, which is based on the calculated weight computed on either the Hoppus Quarter Girth or the Hoppus Side of Square tables. As stated previously, the average diameter of the small end of each log is measured; this is used along with the length of the log to compute the volume with the aid of either of the Hoppus tables. The tonnage is then obtained by dividing the volume by a predetermined divisor depending on (1) the species of log being computed, (2) which Hoppus tables are being used, and (3) according to the bargain agreed upon between the seller and buyer. It is readily seen that the key to this log measure is the divisor used. Theoretically almost any price can be paid for logs as long as the divisor can be changed accordingly. While many proprietors of African firms cannot read or write, they are quite well versed with the ins and outs of the Hoppus tables and which divisor they want with each species.

When a Gold Coast shipper demands payment on actual weight rather than calculated weight, the American buying firm will have the logs weighed in the United States by one of the railroads and

will send certified railroad weight certificates to the shipper. The purchase price for logs bought in this manner is somewhat lower and the shipper does not receive all his money due on the logs FOB Takoradi. At Takoradi he is paid a percentage (usually 80 to 90 percent) due on the calculated weight. After the railroad weight has been obtained, the shipper is then paid the balance due him on the calculated weight plus the amount due on the differences between the actual and calculated weights. This difference usually amounts to about five to eight percent on the calculated weight, but weight differences as high as 30 percent frequently occur.

As is readily seen, the Hoppus tables and the divisors are of primary importance only if the final purchase is to be made on calculated weight. It is also common practice to pay only a percentage of the amount due at the FOB point when buying on calculated weight and to pay the balance due after receipt and examination of the logs in the United States.

The reason for not using local scales to determine the weight of logs is simply that there are no reliable scales available.

The Gold Coast Forestry Department

The Gold Coast Forestry Department possesses a superior technical staff and is quite efficient and active in its operations. Its European staff, in addition to the Chief Conservator and a Deputy Chief Conservator, consists of some 36 graduate foresters. The African staff is composed of about 35 persons employed in clerical positions and about 370 people employed in the various grades of Forest Guard and Forest Ranger.

Basically the policy of the Forestry Department is to use but conserve their forest resources. The Forestry Department is active in the several fields of forestry research. Experiments are being conducted in both natural and artificial regeneration, mensuration, silviculture and in utilization.

The Forests

Excluding the savannah type of forest, by far the greater bulk of the forests of the Gold Coast lies in the southwestern section of the country and amounts to about 16 thousand square miles. Over one-third of the total forested area has been set aside as forest reserves and is under the control of the Forestry Department. The remaining area is being converted into agriculture at the rate of approximately 300 square miles per year. At the present time the bulk of the logging is being carried out on these condemned lands. It is expected that the forest reserves, in addition to exerting a favorable climatic influence, controlling erosion and providing timber for local use, will continue to supply logs and lumber for export indefinitely. Because of increasing population pressure, plans are being made to increase the forest reserves to insure a long-term supply of wood products for local requirements.

Forest Industries

The Gold Coast is undergoing profound changes in its forest industries. From 1937 through 1950 the lumber exports grew from 56 thousand cubic feet in two species to over two million cubic feet in over 18 different species. Not only is band-sawn lumber replacing circular-sawn lumber in exports, but also veneers and plywood are becoming ever-greater export items. The larger sawmills (including the veneer and plywood mills) can boast of equipment, factory sites, layouts, and skilled European labor that compares more than favorably with a large number of American lumber and veneer mills. Of the four larger mills now in operation, three are British and one is American owned, and each now produces about three-quarters of a million cubic feet of lumber per year. The British mills ship principally to the British Isles and the American mill to the United States. About 60 percent of their production is for export and the remainder for local consumption. There are two additional British mills that have the potential of becoming much larger.

Of the more important mills, one is located near Prestea and two in the Takoradi-Sekondi area; the other mill, American, is at Dunkwa. The Prestea mill is said to have the greatest potential in the manufacturing of band-sawn lumber, veneers, and plywood of any of the Gold Coast mills. It is now operating at about fifty percent of capacity in lumber production, and no veneer or plywood is in production. It is also reported that concessions are quite extensive.

The American mill at Dunkwa is reported to be in full lumber production. In addition, flitches for quarter-sliced veneers are manufactured and exported to the United States. Some rotary-sliced veneer is manufactured at this mill; there is no plywood being produced. This mill is also favored with sizable timber concessions.

The remaining large mills are both located in the Takoradi-Sekondi area and both have vertical and rotary slicers. One of these mills recently has begun production of hot-press plywood. As to their supply of logs, one has extensive concessions and the other obtains its requirements from contractors.

Both of the more important of the smaller mills are located in Kumasi and have considerable potential. One mill in Kumasi is operating at full production of about one-half a million cubic feet of lumber per year with approximately a third to a half of its production going for export. The other mill has just begun its sawmill production. Both mills have concessions.

There are several other European-operated mills of some importance. They are located in the Takoradi-Sekondi area, Kumasi, Insu and Dunkwa. Some of these have concessions of varying sizes, and some obtain their logs by purchase from contractors. Each firm manufactures approximately a hundred thousand cubic feet of lumber per year.

In addition to the above-enumerated mills, there are a number of African owned and operated sawmills. Most of their output, which is almost entirely circular or pit-sawn, is consumed locally.

Notes

Loblolly Best in North Mississippi Despite Tip Month and Webworm

Loblolly pine is the best tree to plant on dry ridges and upper slopes in north Mississippi, according to early results of tests near Oxford, in Lafayette county.

In the early spring of 1949, 1950, and 1951, six species of conifers—loblolly, shortleaf, slash, longleaf, and Virginia pine and eastern redcedar—were planted beneath low-grade ridge hardwoods. Immediately afterwards hardwoods on half the plots were killed to release the seedlings from overstory competition.

At the end of the second growing season for the three plantings, released loblolly was superior in survival and height growth (Table 1). Virginia pine had grown nearly as well as loblolly but was inferior in survival. Release had increased the survival of most species and had doubled the height growth of all of them.

As Table 2 indicates, loblolly, shortleaf, and Virginia pine suffered severe early damage from the pine webworm—*Tetralopha robustella* (Zell.)—and from the pine tip moth—*Rhyacionia frustrana* (Comst.) and possibly also *R. rigidana* (Fern.). Although slash pine was lightly afflicted with tip moth (probably *R. rigidana*), it was not damaged severely. Longleaf and eastern redcedar were uninjured by either tip moth or webworm.

Second-year tip-moth infestation was highly significantly greater on released seedlings, with the degree of infestation in released seedlings varying highly significantly among species (excluding non-damaged redcedar and longleaf). In contrast, second-year webworm infestation was highly significantly greater on unreleased seedlings, with the degree of infestation in unreleased seedlings varying significantly among species (excluding non-damaged redcedar and longleaf).

Tip-moth attack, except on slash pine, tended to increase with the age and height of the seedlings (during the first growing season, few buds and twigs are large enough to harbor the larvae). After four years, the released loblolly, shortleaf, and Virginia pines that were planted in 1949 are nearly 100 percent infested. Unreleased trees of the same age and species are 67 percent infested. Despite heavier tip-moth attack, however, the four-year-old released seedlings are more than twice as tall as unreleased ones. On four-year-old slash pine, tip-moth damage is negligible, being confined primarily to lateral branches.

Webworm attack, though less common than tip-moth, is more serious, for webworms kill many seedlings while tip-moth merely retards growth. Webworm damage can be reduced by early release. On four-year-old plots, less than one percent of the released seedlings are infested, as compared to 12 percent (21 percent for shortleaf) for unreleased seedlings.

B. J. Huckenpahler,
Southern Forest Experiment Station.

Table 1.—Second-Year Survival and Height of Underplanted Conifers in North Mississippi

Species	Survival		Height	
	Released	Unreleased	Released	Unreleased
	Percent		*Inches*	
Loblolly	73	62	31	16
Shortleaf	67	57	21	10
Virginia	58	62	30	16
Slash	41	40	25	13
Longleaf	32	24	1	0
Redcedar	66	70	13	7

Table 2.—Tip Moth and Webworm Attacks on Two-Year Old Pines in North Mississippi

Species	Tip Moth		Webworm	
	Released	Unreleased	Released	Unreleased
	Percent of living seedlings attacked			
Loblolly	82	28	4	20
Shortleaf	52	7	9	21
Virginia	83	25	7	26
Slash	20	12	8	12

Publication of S.A.F.-C.I.F. Meeting Papers

By mutual agreement, technical papers by C.I.F. members at the November joint meeting of Canadian and U. S. foresters will appear in *The Forestry Chronicle*, and those by S.A.F. members in the Journal.

Arrangements have been made with the editor of the *Chronicle* to have extra copies printed of the issues carrying meeting papers. These may be purchased at the regular rate of $1 per copy from the editor, Kingsley F. Harris, 3356 West 30th Ave., Vancouver 8, B. C., Canada. Copies of the Journal which carry meeting papers will also be made available for purchase by Canadian foresters.

The June, 1953, issue of the *Chronicle* carries the following papers:

The Role of Ranger Schools in Canada and the United States—H. W. Blenis

Forest Soil Classification and Site Evaluation—G. Angus Hills

Planning for Sustained Yield Operations—George B. Amidon

Wildlife Management in the Yukon Territory—Fred Fraser

The British Columbia Forest Service in the Field of Recreation in Parks and Provincial Forests—C. D. Orchard

Growing Eucalyptus Trees For Profit in Bolivia[1]

Forest plantations are a highly profitable enterprise for many landowners in the valley of Cochabamba, in the central part of Bolivia. Demand for construction timbers, mine props, and firewood is steady and provides a good market.

Taking their cue from their neighbors in Argentina, Brazil, and Chile, who have extensively used the genus *Eucalyptus* for their timber industry, Bolivian ranchers are setting out eucalyptus trees in plantations that range in size from 1 hectare (2.471 acres) up to 50 hectares. The University of Cochabamba, which has taken the lead in making eucalyptus a crop, is growing it as a source of income. Thus far the blue gum eucalyptus has been the most satisfactory species found for commercial plantings in the high valley.

Methods of propagating the blue gum eucalyptus in Bolivia are similar to those used elsewhere. Balled plants must be set out, a fact that makes nursery and planting costs high. The farmer must irrigate his plantings just as he does his cornfields, for the annual rainfall is less than 20 inches a year, and the long winter season is dry. An average of 25 irrigations a year are necessary for the first 4 years, sometimes for the first 5. By the fifth year the trees have developed root systems deep enough to reach the water table.

After five years plantation grown eucalyptus under irrigation in this almost frost free climate will average about seven inches in diameter at breast height and 45 feet in total height. Many growers commence cutting the larger trees between the fifth and tenth years after establishment. This material goes into props for the tin mines and for fuel wood. Branches are made into faggots and sold to the city bakeries. These early cuttings in the plantations reduce competition and result in increased growth in the residual trees. A thinned plantation will usually reach an average d.b.h. of 14 inches by the 10th year.

The landowner can average between three and four dollars income from each of the 2,000 trees he grows per hectare.[2] Since his costs, including cutting and marketing, are less than a dollar per tree, he stands to make a very nice profit. That it is judged so is clear from the number of tree farmers in the Cochabamba Valley of Bolivia.[3]

DONALD D. STEVENSON
Foley, Fla.

[1]A contribution from the Servicio Agricola Interamericano, a technical agricultural service organization for Bolivia, operated jointly by the Government of Bolivia and by the Foreign Agricultural Service, U. S. Dept. of Agric. United States participation in this work was carried out as part of the Point IV program in Bolivia, administered by the Technical Cooperation Administration, U. S. Department of State, through the Institute of Inter-American Affairs.

[2]The exchange rate used is one U. S. dollar to 200 Bolivianos.

[3]The author was formely forester for the Foreign Agricultural Service, assigned to the Servicio Agricola Interamericano in Bolivia. He is now development forester, Buckeye Cellulose Corporation, Foley, Florida.

The Dutch Elm Disease in Urban and Forest Areas

The Dutch elm disease, caused by the fungus *Ceratostomella ulmi* (Schwarz) Buisman, is now thoroughly established in many localities in the United States and Canada. Trees are being killed outright within a year or two and losses caused by this disease are on the increase. Although the elm is valued primarily as a shade and ornamental tree, the amount cut for lumber, formerly between two and three percent of the total hardwood cut, entitles it to a modest but respectable place among the woods used in industry.

The nature of the malady is such that local outbreaks are the rule and the events leading up to these outbreaks are in general well known. The Dutch elm disease is inoculated into healthy elm trees by elm bark beetles which breed in weakened or recently killed elm trees or wood. The principal insect carriers on this continent are the smaller European elm bark beetle (*Scolytus multistriatus* [Marsh.]) and the native elm bark beetle (*Hylurgopinus rufipes* [Eichh.]). Experience has taught that outbreaks of the disease occur primarily where large numbers of these elm bark beetles have developed in the immediate vicinity. When the fungus once becomes established in a population of bark beetles, increasing numbers of these insects become carriers of the disease in each succeeding generation. These insects breed only in freshly cut, recently killed or suddenly weakened elm trees or parts of trees, or in trees recently killed by the Dutch elm disease. The beetles will fly considerable distances, probably several miles, in search of suitable dead elm wood in which to breed. However, inoculation of elms occurs only within a few hundred (500-1,000) feet of the breeding place of the beetles. This takes place soon after emergence from breeding or hibernation and is accomplished by beetles feeding on the young twigs and branches of healthy trees. This explains the outbreaks of the disease within a short distance of beetle-breeding places, and offers the key to the practice of local control in urban areas.

In Urban Areas

Since the principal hazard in any case is recently killed or cut elm wood suitable for breeding bark beetles, the prompt and timely removal or destruction of such wood is the essence of control. Dangerous beetle-breeding wood may be destroyed by burning, or by peeling and burning the bark. Another method is to thoroughly spray all the exposed bark surface with 2 percent DDT in fuel oil. Due to the oil this mixture is inflammable and, further, it will kill vegetation with which it comes in contact. Total immersion of elm wood in water will also prevent the development of bark beetles. These methods are troublesome and costly and are justified only where the value of the remaining elms appears to

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warrant such measures or where the necessary removal of dead trees would be even more costly.

Spraying experiments using heavy applications of DDT with hydraulic or mist blower type of equipment have been tried in towns and cities. Some reduction in the amount of disease has resulted from these efforts, but the high annual cost, possible injury to the trees from repeated applications and increase in mite populations in sprayed areas, combine to place definite limitations on this type of spraying as a control method. When used as a supplement to dead elm wood sanitation, spraying may be helpful in local situations where cooperation of neighboring property owners in the removal of beetle breeding wood cannot be secured. Spraying alone cannot now be depended upon to effectively control the Dutch elm disease.

In Park and Woodland Areas

These control methods have been developed primarily against the disease in urban districts, but the underlying principles may well be applied in dealing with the disease in wooded areas. The disease is usually detected first in or near towns and cities, where conditions are likely to be favorable for its initiation. It then gradually works its way into nearby woodlands, especially if condemned, diseased or discarded elms are dumped at the edge of the city without burning. Extensive killing of elms has also been observed in forest areas following clearing for roads, power lines or similar operations where elm trees were cut and left on the

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Aluminum shield against thigh for perfect balance, easier guiding.

Lower your Christmas Tree cutting costs by 50%
Write for data on sugar-maple tapping attachment

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29 CLINTON STREET • MILFORD, N. H.

ground. Such freshly cut elm immediately becomes attractive to bark beetles and these insects may fly in from considerable distances to lay their eggs in the trunks and branches of these cut elms. There is always the possibility that some of the beetles thus attracted will have the spores of the Dutch elm disease on their bodies. In this case the progeny of these beetles will carry the fungus when they emerge from the dead wood and as they feed on nearby healthy elms, will inoculate these with the disease. Once started in an area where elms are near together, the spread of the disease becomes continuous. Control of the disease in such areas is possible only by effective and timely removal of all elm wood in which elm bark beetles could breed. Such control is practicable only if the lumber or landscape value of the remaining elms justifies the cost.

In Forest Areas

When the disease once becomes established in forest areas where the elimination of diseased trees and other beetle-breeding wood is out of the question, the immediate liquidation of all valuable elm in the vicinity is the only way to avoid a complete loss of this component of the stand. Where these hazards from dead elm wood exist, and the volume and stumpage value of elm would justify the operation, immediate utilization of all saleable elms would be advisable. Control of the disease under such conditions is quite impractical by any method now known. The alternative would be to make use of the elm wood before the disease renders it worthless.

The above statements apply particularly to the Middle Atlantic and New England States. In areas to the west, the elm situation is further complicated by the presence of the destructive virus disease, elm phloem necrosis. Where both diseases are present, the future of the elm as a forest tree is even more uncertain.

D. S. Welch,
Cornell University,
Ithaca, New York.

Points of View

Forest Industries Council[1] Recommendations on Forest Ownership Study

In view of previous discussion in the pages of the Journal[2,3] *in which several references have been made to recommendations made by the Forest Industries Council to Secretary of Agriculture Benson, the* Journal *requested Mr. Greeley to make available to its readers a statement summarizing those recommendations. Mr. Greeley's statement follows:*

I appreciate the opportunity afforded to give the readers of the Journal a little more of the background of points raised in Chris Granger's letter of March 10, addressed to the Secretary of Agriculture.

I was one of a group representing the Forest Industries Council which called on Secretary Benson last January. Our suggestions in respect to future federal ownership of forest land were incorporated in a letter which I sent to the Secretary under date of January 28.

Our group made it clear that we were not associated with any proposals to break down the system of National Forests. We urged that these federal properties be maintained as part of the "basic national policy." But we expressed a belief that the time has come when their boundaries and particularly current plans for their extension should be realistically examined in the light of present conditions in each of the states concerned. In view of various current proposals for reducing federal land ownership, some of them drastic in nature, we suggested that the Department itself initiate a survey of the forest land situation with a view to determining its own policy by intelligent planning. In other words, meet the situation coming with a constructive program of its own. We felt that such a study would be helpful in setting up a desirable pattern of forest land ownership, federal, state and private; and also in determining the effective place in the picture for lands now under federal custody but for which no permanent status or administration has yet been established.

The interview and letter advocated that the Secretary select the chairman of a group to conduct the study in each state in relation to its specific land and forest conditions; that the recommendations from each state group, or committee, be reviewed by the Department and, after approval or modification, become the working plan for further National Forest expansions or eliminations in the state concerned. Some proposals might require legislation; but many could doubtless be put in effect under existing administrative authority.

W. B. Greeley

[1]The council is the policy coordinating organization of the forest industries and is composed of representatives from the paper and pulp, pulpwood, and lumber industries.

[2]Granger, C. M. An open letter to the Secretary of Agriculture. Jour. Forestry 51:448-449. 1953.

[3]Greeley, W. B. Comments upon "An open letter to the Secretary of Agriculture." Jour. Forestry 51: 582. 1953.

Program of Annual Meeting

Page 664

A **MESSAGE** *TO FORESTERS . . . .*

Today, the forest industries of the United States employ approximately 5,600 college trained foresters. The ever-increasing employment of professionally trained foresters assures valuable assistance in the perpetuation and wise use of our nation's forests.

★

in furtherance of this objective,

WE BELIEVE IN:

- GROWING MORE TREES—CONTINUOUSLY
- USING THEM AS FULLY AS POSSIBLE
- PROVIDING BETTER LUMBER AT LOWER PRICES
- DEVELOPING NEW AND BETTER WOOD PRODUCTS THROUGH RESEARCH
- SAFEGUARDING THE PRIVATE ENTERPRISE SYSTEM

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A Federation of Associations of Lumber Manufacturers including:

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APPALACHIAN HARDWOOD MANUFACTURERS, INC.
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HARDWOOD PLYWOOD INSTITUTE
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NATIONAL OAK FLOORING MANUFACTURERS ASSOCIATION
NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION
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Darley Portables Must Be Good! State of Minn. Forestry Dept. Has 45 Champions in Service!

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Darley Engineering Brings You More Water and Higher Pressures with Champion Lightweight Portables.

Capacity up to 250 gallons per minute. Pressures up to 125 lbs.

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Manufacturers of Champion Fire Pumps and Champion Fire Apparatus

Reviews

Chemical Processing of Wood.

By Alfred J. Stamm and Elwin E. Harris. 595 pp. Chemical Publishing Co., Inc., New York. 1953. $12.

This book fills an important gap in our technical literature pertaining to wood. Several comprehensive scientific books cover the chemical nature and behavior of wood and the fundamental chemistry involved in industrial processes, but they do not discuss the technology of these processes. There are also specific books dealing with the technology of single industries, especially pulp and paper, and the cellulose derivative industries, such as rayon. However, none of these gathers together in one volume the chemical technology of wood by all types of processes. This book is especially useful to the industrial chemist and engineer because it does just that.

The book begins with a short chapter dealing with sources and availability of wood as a chemical raw material, and includes interesting statistics on logging and primary manufacturing residues and annual drain. Following this are chapters which introduce the reader to the chemistry of the constituents of wood, the anatomical structure of wood, its surface properties, and its mechanical and thermal properties. The chapter dealing with the constituents of wood is rather detailed and comprehensive for those unacquainted with the subject. A clearer definition of terms, such as holocellulose, would be helpful.

After this introduction to the general chemical and physical properties of wood, there are two brief chapters dealing with the drying of wood and its preservative treatment. The remaining two-thirds of

(*Continued on page 650*)

Natural and planted pine stands in the South perpetuate one of the nation's most important industries, the manufacture of paper

SOUTHLAND PAPER MILLS, INC.

LUFKIN, TEXAS

COLLIER AND CORY look down on a forest fire in the Pacific Northwest

tree farming provides better fire protection . . .

A fire in the forest is one of the tree farmers' worst enemies . . . and a constant hazard for which they must always be prepared. Industrial foresters know that long-range plans for managing timber as a crop are worthwhile only when good fire control programs are in force to protect both the trees and land for future use.

Fighting a forest fire is dangerous and costly. It is easier to prevent fires than fight them . . . and since most of them are man-caused, they can be prevented.

On privately owned tree farms in the Pacific Northwest, every precaution is taken to prevent accidental fire in the woods. Here, forestland owners pool their resources for cooperative fire control, working with federal and state forest agencies. They man lookout towers in fire season, build and maintain hundreds of miles of fire access roads and operate mechanized fire-fighting equipment when needed. Men are trained in all phases of prevention and suppression . . . and are directed in the field by modern short-wave radio. As a result, tree farmers are effectively reducing the amount of timber lost through forest fires.

All of the forestlands owned by Weyerhaeuser Timber Company are managed as protected tree farms under the direction of skilled foresters. *Write us at Box A, Tacoma, Washington for your free copy of our colorful new booklet, Tree Farming in the Pacific Northwest.*

To help keep America green, tree farmers across the nation are constantly on guard against destructive fires in the forest.

Weyerhaeuser Timber Company

Wood is one of the nation's most valuable and versatile raw materials. People and industry use wood every day as lumber, pulp and paper, fibers, chemicals and in many other ways. To supply this market, our company is growing trees and manufacturing a variety of forest products.

National opinion surveys indicate that the public does not know about the progress being made in industrial forestry. Weyerhaeuser Timber Company is telling part of the story in a series of national magazine advertisements such as reproduced above. The Company believes that all who are engaged in industrial forest management should tell the facts about tree farming at every opportunity.

WORKING IN THE PACIFIC NORTHWEST TO CREATE A PERMANENT FOREST INDUSTRY

M and M WOOD WORKING COMPANY

A timber owning, operating and managing company

Malarkey facilities are strategically located near company-owned and public-owned timber. Diversification and flexibility of plants and products permits M and M to realize the maximum economic value from the Douglas fir and redwood trees.

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Portland Lumber Division, Portland, Oregon
Albany Plywood Division, Albany, Oregon
Idanha Veneer Division, Idanha, Oregon
Lyons Veneer Division, Lyons, Oregon
Guerrier Lumber Division, Springfield, Oregon
Longview Plywood Division, Longview, Washington
Eureka Plywood Division, Eureka, California
Eureka Shadowood Division, Eureka, California
Eureka Redwood Lumber Company, Eureka, Calif.

TIMBER SOURCES

Standing timber wholly owned or controlled by M and M totalled 2,633,330,000 feet at year end with 164,157,000 feet under cutting contracts.

Manufacturers of
MALARKEY PLYWOODS DOORS LUMBER

The **Hoffco** 2 h.p. THE ANSWER TO EVERY GROWTH-CLEARING PROBLEM!

POWER UNIT AND ATTACHMENTS

New 2 h.p. HOFFCO POWER UNIT, using SAWETTE, TRIMETTE, and SCYTHETTE attachments, clears weeds, brush, trees! You stand safely upright, cover ground **400% faster** with HOFFCO. Light-weight—powered for heavy-duty jobs—small or large. Take the labor out of clearing—use the HOFFCO POWER UNIT—with SCYTHETTE, SAWETTE, and TRIMETTE!

POWER UNIT PRICE . . . $123.00 F.O.B. factory

Sawette HOFFCO's SAWETTE works easily on smallest brush—or trees up to 8 inches and over in diameter. America's **outstanding** chain-saw!
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Trimette Use TRIMETTE to trim near walks, stones, drives! 7-inch blade creates suction, distributes mulch evenly. Save work—with TRIMETTE!
PRICE TO BE ANNOUNCED

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Breaking New Ground is a personal account by Gifford Pinchot of his work in laying the foundations of forestry and conservation of natural resources during the critical period of the 1890's and the first decade of the present century. Based on diaries, official correspondence, and other records—full of adventure and lively stories and portraits of the men whom Pinchot knew.

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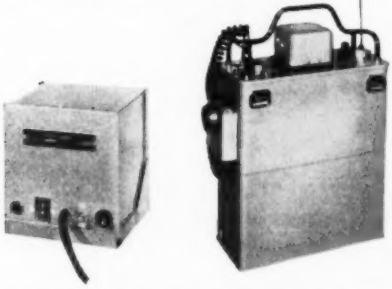
Gives the Axe to LOST TIME and MILEAGE with Motorola 2-way radio

Operations Centrally Controlled. Dispatcher at central station console directs mobile crews, keeps supplies moving, sends fire-danger ratings to remote areas. Powerful Motorola transmitters reach mobile units over wide area.



Powerful Motorola Pack Unit—a heavy-duty portable radiophone that's ideal for extended trips to distant areas. Operates on its own battery, on 117 volt A.C., or storage battery when used with special plug-in Motorola Power Supply Unit (at left).

Instant communications speeds work of men and machines . . . increases work output over vast 2-state area

Get *more* logs out—and get them out *faster*—with rugged Motorola 2-way Radio. Instant contact flashes fire danger ratings to remote crews . . . eliminates lost time and mileage . . . keeps men and machinery working efficiently. One leading timber company uses Motorola 2-way Radio to assure swift, uninterrupted communications over a giant 2-state area. Taking the roughest kind of jobs and terrain in stride, Motorola mobile units consistently deliver outstanding performance.

Eight exclusive Motorola improvements assure precision selectivity, time-tested durability, *lowest overall maintenance costs.* Advanced design guarantees long years of obsolescence free service.

Let a friendly Motorola engineer in your vicinity give you the complete Motorola story.

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THE plan is based on years of study.

IT is founded on sound forest economic principles, and will insure a constant supply of wood for the foreseeable future.

PENOBSCOT CHEMICAL FIBRE COMPANY

GREAT WORKS, MAINE

the book discusses the technology of the chemical processing of wood by the conventional and new methods, properly including processes which may have future possibilities such as hydrogenation, but are as yet of little or no economic importance, as well as processes which held past importance but have declined, such as wood distillation. In some cases useful information is given on the relative present-day economic importance and future possibilities of various processes, but a more complete picture would be helpful. Quite properly, the chapters dealing with pulp and paper and cellulose derivatives are relatively brief since these subjects are widely discussed in the literature. The authors do, however, present a good general picture of these important industrial processes for the person unacquainted with them.

Particularly interesting and valuable are the chapters dealing with modified woods, wood-base plastics and boards, pulp boards, and paper-base laminates. These subjects have received inadequate attention previously.

The text of this book is supported by a great deal of data and by an extensive bibliography which enhances its value. There are 90 tables and 35 figures. Each chapter has a rather large bibliography dealing with the particular subject under discussion.

The long association of the authors with the U. S. Forest Products Laboratory has given them an unusual breadth of contact with wood chemistry and wood processes. This is reflected in the comprehensive nature of the book and especially in those chapters dealing with subjects in which the authors played a large role, such as modified wood, and hydrolysis and surface properties. A valuable addition to our technical literature.

E. C. JAHN.

A Natural History of Western Trees.

By Donald Culross Peattie. 751 pp. Illus. Houghton Mifflin Co.,

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WE Combination Pruner and Saw

Now available for immediate shipment. Simply write for our attractive folder describing this combination in detail and we will reply by return mail.

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Made with pure Egyptian black asphalt base. Easily applied with ordinary brush. Ingredients helpful for healing tree wounds. Will not freeze, crack or blister. Packed in convenient containers of 48 ½ Pt., 48 1 Pt., 24 1 Qt., 6 1 Gal. Cans. Also in 5 Gal., 30 Gal. or 50 Gal. Drums.

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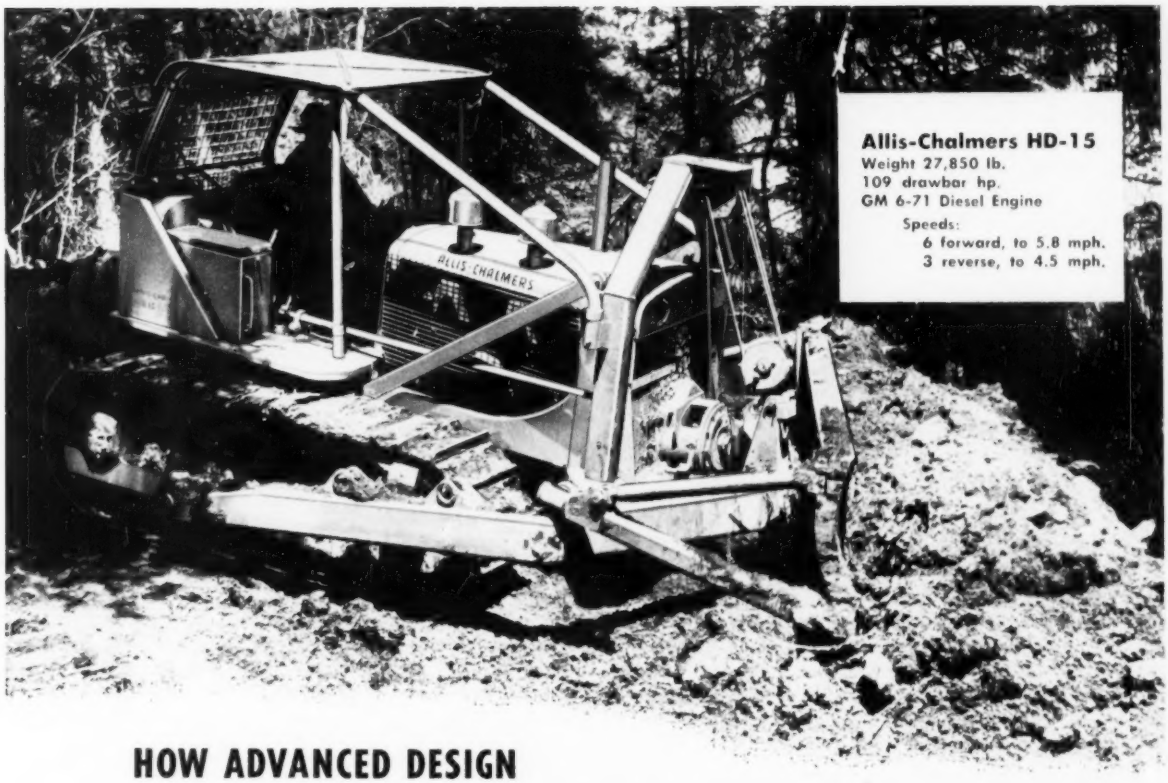

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Speeds:
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Makes Allis-Chalmers Tractors more dependable

These heavy-duty tractors have toughness and ease of servicing to match their outstanding performance ability. Here are some of the advanced design features that provide extra strength and protection — keep Allis-Chalmers tractors on the job more hours:

1. One-Piece, All-Welded Structural Main Frame . . . strong and firm without a single ounce of excess weight — absorbs all vertical and horizontal stresses.

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6. Engine Not Used as Structural Member — no strain is transmitted to it. Engine weighs less per horsepower developed, because of 2-cycle design — has modern unit injection.

UNIT CONSTRUCTION SAVES SERVICE TIME

With Allis-Chalmers *unit construction*, major assemblies are easily removed without disturbing related assemblies. This brings real savings in time and money, puts tractors back to work faster. It assures better inspection and maintenance, too. Servicemen find it easy to remove major parts to correct trouble before damage develops.

Let your dealer tell you more about the toughness of Allis-Chalmers tractors, their time-saving unit construction — and their unequalled lugability and work power.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Boston, Mass. 1953. $6.00. Illus. by Paul Landacre.

Little need be said about this volume, for the inimitable style typical of past works of the author, which speak for themselves, is reflected in its contents. From Donald Culross Peattie we have come to expect that scientific aspects of natural history be interpreted in an interesting and readable manner. This book does not vary from that pattern; it stands out as an admirable example of the skill of a true interpreter.

The author deals with more than 200 species of native trees which inhabit the area from the Mexican boundary north to the Arctic, and from the western section of the great plains to the Pacific. Such a comprehensive work, of course, cannot be properly developed without assistance in certain of its varied aspects, and foresters will be interested in the fact that the author received such help from a number of capable men who are actively engaged in forestry and the lumber industry. Thus, the technical accuracy of the material contained is assured.

This book is more than a presentation of scientific facts relative to the identification of western trees. True, there are descriptive keys for those who are equipped to use them, and the treatment of each species includes the usual technical data regarding its taxonomic characteristics and range, but upon this necessary foundation the author builds a superstructure of information which presents each tree in the light of its varied interests—its uses, its habitat and associates, its connection with history and literature, its relation to primitive people, and many similar features. As a result, each description is a word picture that provides the reader not only with details necessary for its identification, but with an understanding of each tree's personality. The fine descriptive style may account for the fact that, to this person at least, the illustrations are somewhat disappointing. Although they were done by a competent artist it seemed that the book would have been enhanced by more liberal artistic treatment of more than one feature of each species. But, while many tree books depend upon illustrations to support and enhance the text, this one reverses that process, a pleasing departure from the customary method when handled in the Peattie manner.

In short, while many tree books have appeared, and will continue to appear in the future, this one will be a welcome addition to the library of any forester, as well as to anyone else whose work or interests are embodied in the outdoors. It is not only authoritative but will provide many hours of pleasant relaxation.

C. FRANK BROCKMAN,
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The battle of the budworm—Canada, 1953—was the biggest, toughest forest spray job in history. And . . . once again, it was CENTRAL's aircraft and CENTRAL's experienced, forest-wise personnel doing the "impossible" . . .

- Assembling a fleet of 57 spraying aircraft from eight states — ON TIME!
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- Getting out a record total of spray, in spite of adverse weather and rough terrain ON TIME!

Foresters and timber operators know they can depend on CENTRAL for swift, economical and efficient aerial application, over large or small timber acreages.

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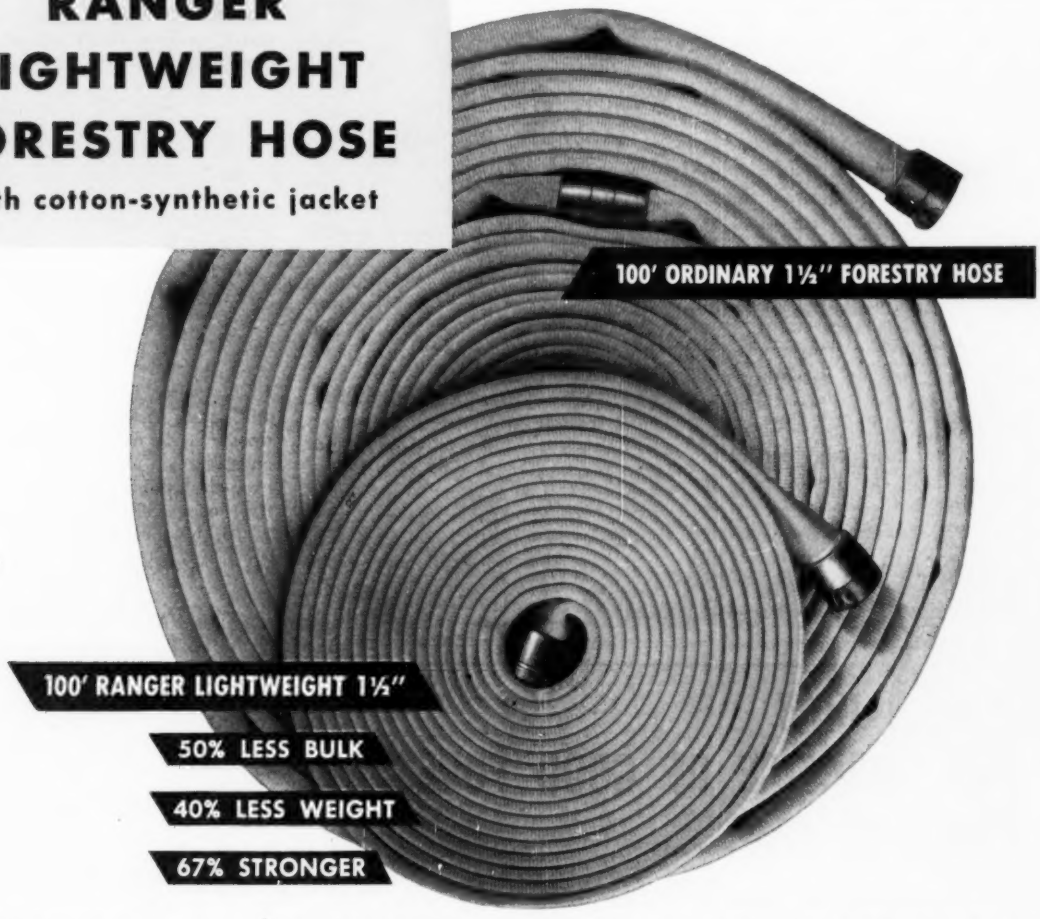
Greatest improvement in forestry hose in 20 years

RANGER LIGHTWEIGHT FORESTRY HOSE

with cotton-synthetic jacket



Here's a great, new forestry hose—AMERICAN's Ranger Lightweight—developed especially for fighting forest, brush and grass fires. Jacket of cotton-synthetic fiber combined with laminated rubber lining gives you amazing lightness, toughness and flexibility.

HANDLES EASIER . . . Flat cure coils and stores easily, remains flexible wet or dry. 40% lighter than conventional hose, so fire fighters can lug more of it faster. Bright yellow.

DELIVERS MORE WATER AT FIRE LINE . . . Smooth lining reduces friction and turbulence so same pump throws more water. Won't swell under pressure and loosen couplings.

LASTS LONGER . . . Cotton-synthetic jacket resists snagging and wear.

WILL NOT MILDEW OR ROT . . .

Available in 100-foot lengths that save you weight and cost of extra couplings . . . 1″ and 1½″ diameters. 300-lb. working pressures, 1000-lb. bursting strength.

Why fuss with heavy-hard-to-handle hose? Order AMERICAN'S Ranger Lightweight forestry hose NOW from your dealer . . . or call our nearest office.

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ST. LOUIS: 843 So. Lindbergh Blvd., WYndom 2226

AR-20

The Conservation Yearbook: 1953.

Edited by Erle Kauffman. 320 pp. Publication office, 1740 K Street, N. W., Washington 6, D. C. 1953. $5.50.

This is the second annual edition of a publication designed as a reference and guide for anyone concerned with the nation's natural resources, and as a tool for conservation workers and organizations.

It fulfills its mission admirably.

This edition is somewhat larger than the first and contains a new section on conservation education. Beside this, as an annual publication, it brings up to date not only its mass of facts and figures but also its listings of the names and addresses of persons directly or indirectly engaged in conservation work, from U. S. Senate committee members to individual consulting foresters and state-employed district foresters.

The 1952 *Conservation Yearbook* was reviewed in the October, 1952, issue of the JOURNAL, at which time it was pointed out that it was impossible, within the scope of a short review, to adequately indicate the wealth of information contained. The second edition is a refinement, an enlargement, and a bringing up to date of this excellent publication.

Publications of Interest

The School of Forestry of Duke University has published a booklet entitled *Forestry as a Career*, which gives in detail the types of jobs open to professional foresters, personal requirements for success, educational preparation and employment opportunities. A second section of the booklet describes the facilities at Duke for the training of foresters. The University has also issued its annual bulletin of the School of Forestry containing its announcements and information as to courses, fees, faculty, requirements for degrees, etc., for the school year 1953-1954.

A description is given in both booklets of Duke's "Cooperative Plan of Study with Selected Colleges of Liberal Arts and Sciences," under which the student spends his first three years, either at Duke or one of a selected group of liberal arts and sciences colleges, in a coordinated program of study in the basic arts and sciences, and the following two summers and two school years in the School of Forestry. Graduation brings a bachelor's degree from the undergraduate college and a professional Master of Forestry degree from Duke.

* * *

The California Small Woodlands Council, under the chairmanship of Dean F. S. Baker of the University of California School of Forestry, has published the first four in a series of *Timber Tips* for small woodland owners of California, produced in cooperation with the University of California and the U. S. Department of Agriculture.

This series is designed to focus attention on the problems of the small woodland, to issue concise suggestions on utilization and management, and to promote establishment of demonstrations of good forest practices for the benefit of timber owners.

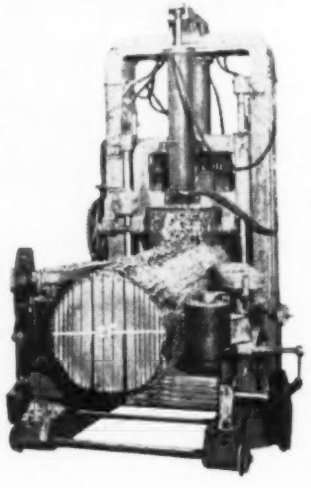
Copies can be obtained by writing to, Office of the Director, College of Agriculture, Berkeley 4, Calif.

HERE'S HOW
THE PRACTICE OF GOOD FORESTRY
CAN PAY OFF....

From the Southern Pine Regions to the Pacific Northwest Timberlands, from the Maine Woods to California and in Canada, Sunbo and Super Gang Saws are contributing greatly to the practice of Good Forestry. This equipment has made profitable the utilization of virtually the entire forest crop by the processing of smaller logs which formerly were burned as waste or left to rot in the forest. At the same time fire hazard in the woods has been reduced and the reproduction of new forests has been hastened.

These Gang Saws provide greater accuracy and precision thereby reducing wastage and increasing the yield in board feet as much as 30%.

Many saw mills, too, are now getting better utilization and more efficient operation by installing a Sunbo Gang Saw as an auxiliary to their big mill or as a partner to their circular mill. That's why it will pay you to consult us.



Mill Engineering & Supply Co. manufacture the *only complete* line of Gang Saws in America and each model has received world wide recognition. There is a model to fit your operation . . . either semi-portable or for the largest installations the big SUPER GANG.

Specifications and Engineering data readily available.

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Welcome to your convention.

For Extra Pull, Put KING Up Front

Complete Front-Mount Winch Assemblies

Be prepared on your forestry patrol . . . for clearing trails, skidding logs, pulling mobile equipment over rough or swampy terrain . . . with a KING Winch up front on your jeep or truck.

The King Model 100 power-take-off driven winch assembly, shown at left pulling a log during a North Atlantic Pact military demonstration, gives a powerful 8000-pound pull to your forestry projects.

Lightweight and properly balanced, yet ruggedly braced to handle the toughest pulling jobs, KING Front-Mount Winches have been proved, by many similar demonstrations and 21 years' operational experience, to be capable of tackling the most demanding pulling tasks.

Whether crankshaft driven for 3-speed transmissions or power-take-off driven for 4-speed transmissions, KING Winches are complete "factory fit" assemblies for Willys, Ford, Chevrolet, GMC and some Dodge trucks.

KOENIG ALL-STEEL JEEP CABS FOR EXTRA ALL-WEATHER PROTECTION

Write for bulletins on KING Assemblies to fit your vehicles.

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To insure that this supply will be permanent, on which the free press of America can depend, Great Northern has over two and one-quarter million acres of Maine timberland under conservative forestry management.

GREAT NORTHERN PAPER COMPANY

BANGOR, MAINE

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Current Literature

Compiled by MARTHA MEELIG, *Librarian, State University of New York College of Forestry. Range Management Section Compiled by* FRANCES FLICK, *Library, U. S. Department of Agriculture*

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Silviculture

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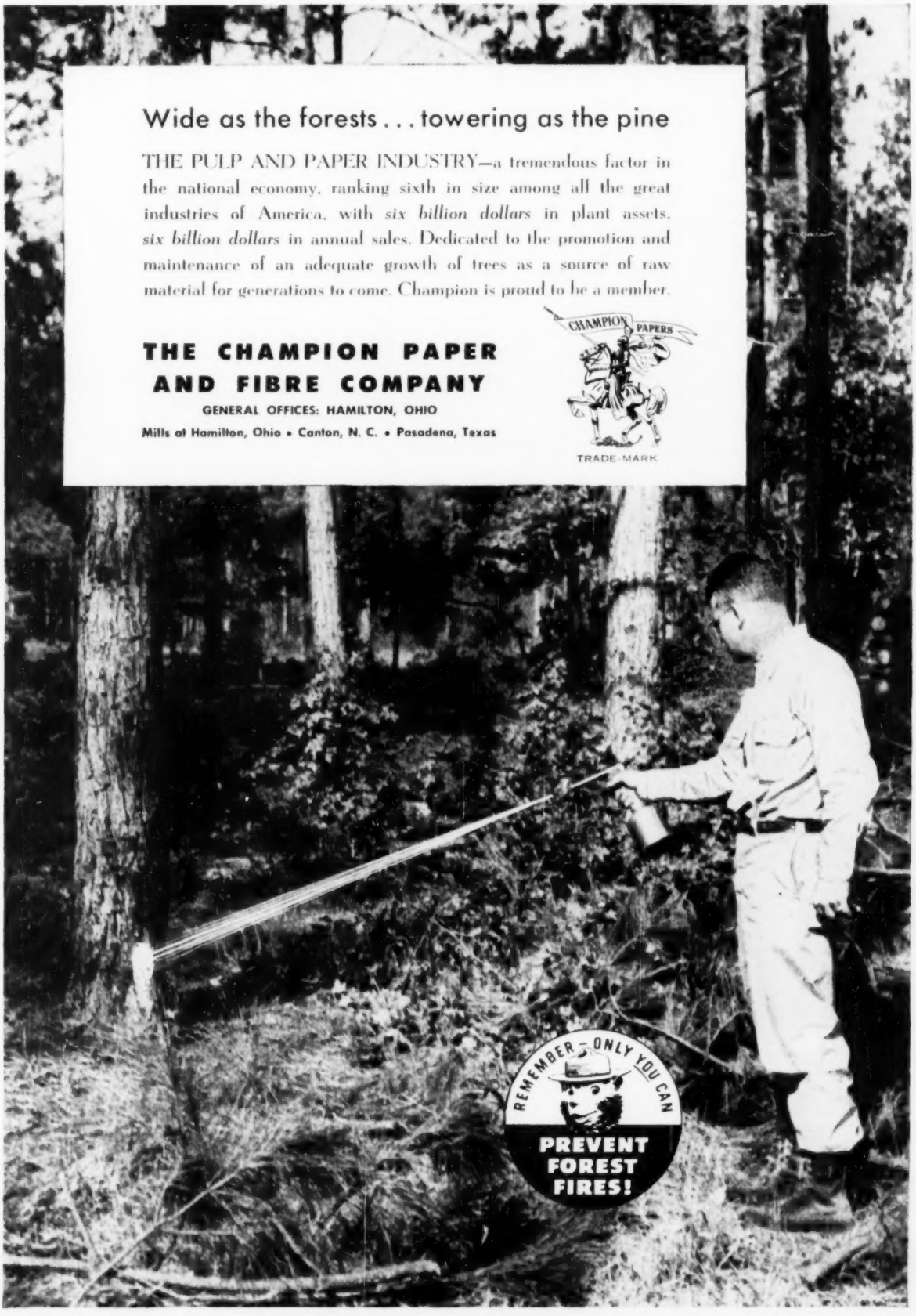
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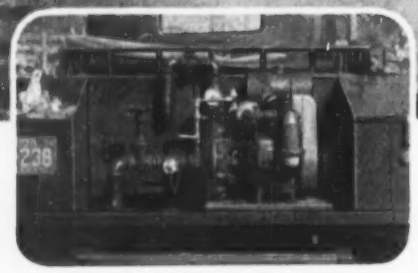

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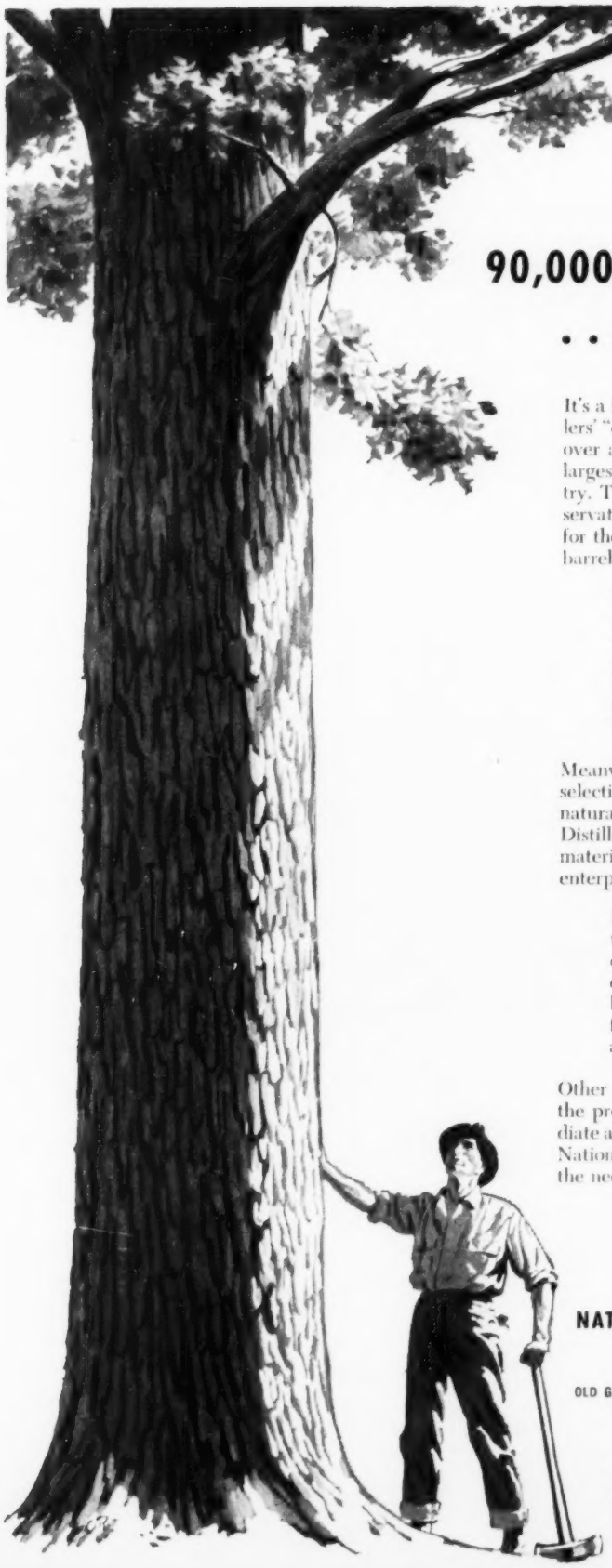

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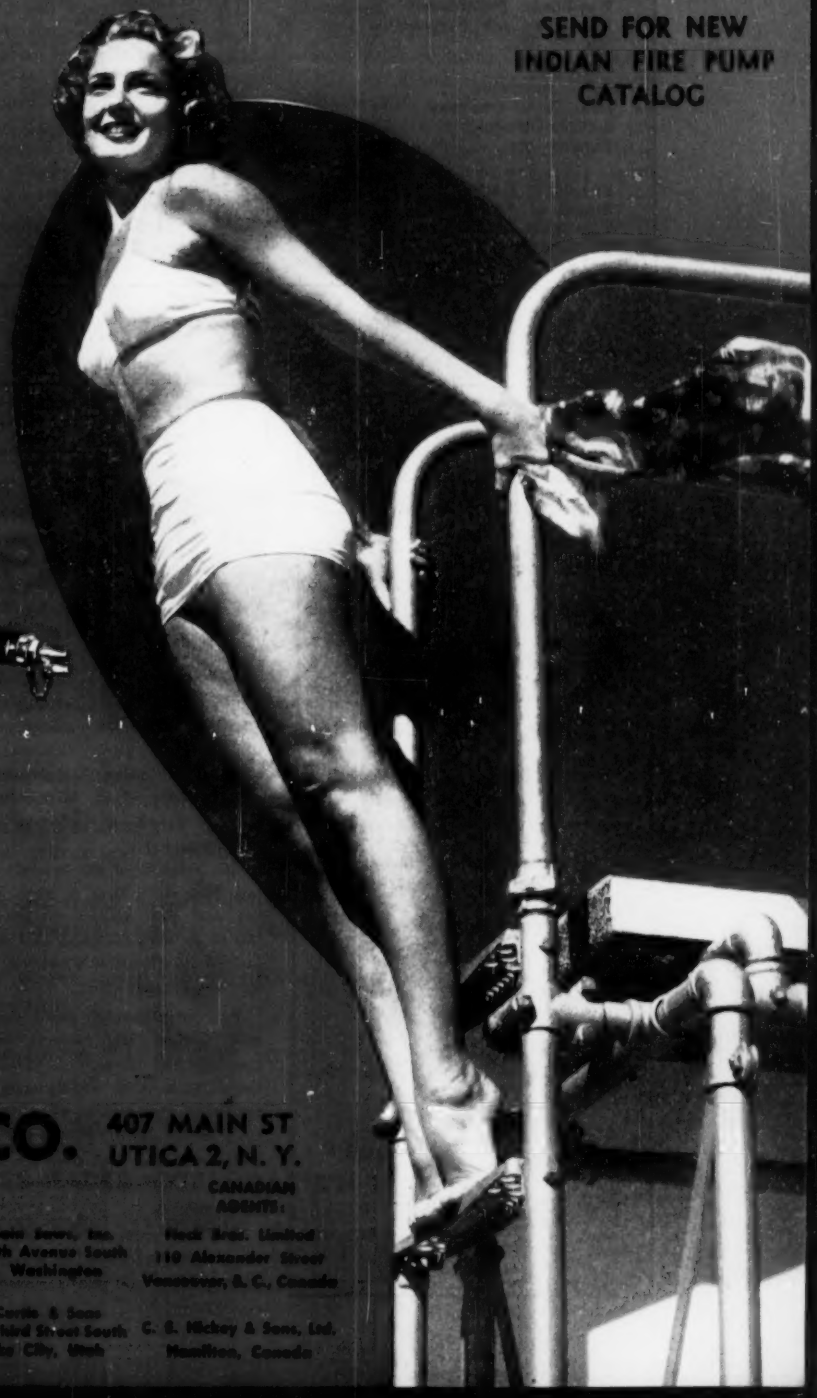

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Society Affairs Index

The contents of the SOCIETY AFFAIRS section in this Convention issue are widely dispersed through a volume of advertising which represents the interest and well wishes of many industrial concerns. For the reader's convenience a sub-index of contents of this section follows:

The President's Column page 662

Annual Meeting Program page 664

Sixth Call for Council Nominations page 682

Nominations for Grade of Fellow Now Open page 686

Society Publications: A Bibliography page 691

Announcement of Applicants page 696

The President's Column

A forester's reputation in the profession is determined, not by the opinion he has of himself, but by what his professional colleagues think of him. In a larger sense, the standing of a profession is not determined by what that profession's society thinks of it, but rather by its reputation among technical and scientific societies.

One activity of the Society of American Foresters that is very important, but not well known to the members, has to do with contacts and cooperative projects with other technical and scientific organizations.

By maintaining close liaison with such bodies, the Society helps build prestige for forestry. The fact that forestry is now widely and generally accorded the status of a true profession came about not because the Society said so, but because other professional bodies gave forestry that recognition.

For three decades the Society has been affiliated with the American Association for the Advancement of Science, and has two members regularly serving on the AAAS Council. Until the Society's membership got so large that it became desirable to hold its own separate annual meetings, the Society used to hold meetings with AAAS.

Another important affiliation that has been of inestimable value to the Society is its membership in the National Research Council's Division of Biology and Agriculture. The current Forestry Research Project, now being carried on by the Society under a grant of $30,000 from the Rockefeller Foundation, is supervised by a steering committee representing both the Society and the National Research Council.

Several years ago when the American Institute of Biological Sciences was organized under the sponsorship of the National Research Council, the Society was invited to become an affiliate. Our Society cooperated with the other 23 biological societies in helping A.I.B.S. develop a national roster of technical and scientific manpower to be used in case of another national emergency.

It is not by chance that such influential scientific bodies have invited the Society to participate in activities of mutual advantage. Our Society has become a clearing house—in fact, *the* clearing house—for information and policies affecting the profession, including professional education.

In the fields of professional education and accreditation the Society has long enjoyed cooperative relations with the American Council on Education, and more recently with the National Commission on Accrediting. At present the Society is laying plans to join with other professional societies in undertaking accrediting by working through the several regional educational associations rather than alone.

An organization that is unique in American education is the Southern Regional Education Board. The efforts of this board in giving guidance and leadership to professional education and research in forestry have been of the utmost value to our seven accredited schools in the South. The Society acts as a consultant to the board.

A cooperative project that has been functioning successfully for more than a decade is the Society's participation in the joint Committee on Fire Control Equipment with the American Society of Mechanical Engineers. Concerned principally with engineering research in the design and improvement of instruments, equipment, and machinery used in fire control, this committee works closely with manufacturers.

Although not a technical or scientific organization in itself, the Natural Resources Council of America contains such societies in its membership. A service organization, not a policy making body, the Natural Resources Council is made up of 40 national and regional associations engaged in resource conservation.

Through our membership in N.R.C., the Society has mutually valuable contact with such organizations as the American Society of Range Management, American Society of Zoologists, Ecological Society of America, Grassland Research Foundation, Soil Conservation Society of America, and the Wildlife Society, to name only a few.

Not all the Society's important contacts with technical and scientific bodies is on the national level. Some Sections have long been affiliated with state and regional technical groups, and have helped develop splendid professional relations thereby.

My own Puget Sound Section is an active member of the Puget Sound Engineering Council. Likewise the Central Rocky Mountain Section has long held membership in the Colorado Engineering Council. This active Section frequently holds joint meetings with other professional societies; a quite successful one was held last spring with the Colorado Section of the American Society of Range Management.

For a number of years the Washington (D.C.) Section has been a member, with an official representative, of the Washington Academy of Sciences. The Columbia River Section last year participated in a meeting with the Western Section, American Association for the Advancement of Science.

Instances, such as the foregoing, could be cited indefinitely. The important point I want to make is this; our national Society, the Sections, and even the Chapters have established nu-

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The achievement of advances in science and technology by students of forestry and chemistry under scholarships and fellowships.

The promise of a stronger and better nation through sincere and effective cooperation among industry, government and the people.

The blessings bestowed by nature upon our country in the ability of our forests, farms and people to produce.

The broad horizons of the future that are ours because of a sound and stable past

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merous worthwhile contacts with other technical societies. These contacts have in some cases developed into cooperative projects of value to forestry as well as to the cooperating organizations.

If a man is known by the company he keeps, so is a professional society. I think every S.A.F. member can take pride in the kind of societies that are friends of our Society.

Geo. L. Drake

Annual Meeting

Society of American Foresters

Colorado Springs, Colo., September 14-17, 1953

Theme: "Nature on Edge"

Schedule of Events

Those expecting to attend the meeting are urged to arrive in Colorado Springs on Sunday, September 13, or not later than the morning of Monday, September 14. The open meetings start on Monday morning.

As will be seen from the following schedule of events, there will be numerous meetings and sessions arranged so as to provide attractions for a diversity of interests.

Saturday, September 12

Council of Forestry School Executives, all-day (executive) meeting.

Sunday, September 13

S.A.F. Council, morning and afternoon meeting.

JOURNAL OF FORESTRY Editorial Board, evening conference.

Committee on Accrediting, evening conference.

Joint meeting of the Council and Section Delegates, evening.

Xi Sigma Pi biennial convention, evening. The meeting will be open to active or alumni members of the fraternity.

Monday, September 14

Division of Education, morning and afternoon sessions.

Division of Silviculture, morning and afternoon sessions.

Divisions of Private Forestry and Forest Products, joint morning and afternoon sessions.

Division of Public Relations, evening session.

Division of Economics and Policy, evening session.

Association of Consulting Foresters, evening meeting.

Tuesday, September 15

General meeting, morning.

Society Affairs session, afternoon.

Chuck Wagon Dinner at the Garden of the Gods, evening.

Wednesday, September 16

Division of Forest Management, morning and afternoon sessions.

Divisions of Watershed Management and Range Management, joint morning and afternoon sessions.

Division of Recreation and Wildlife

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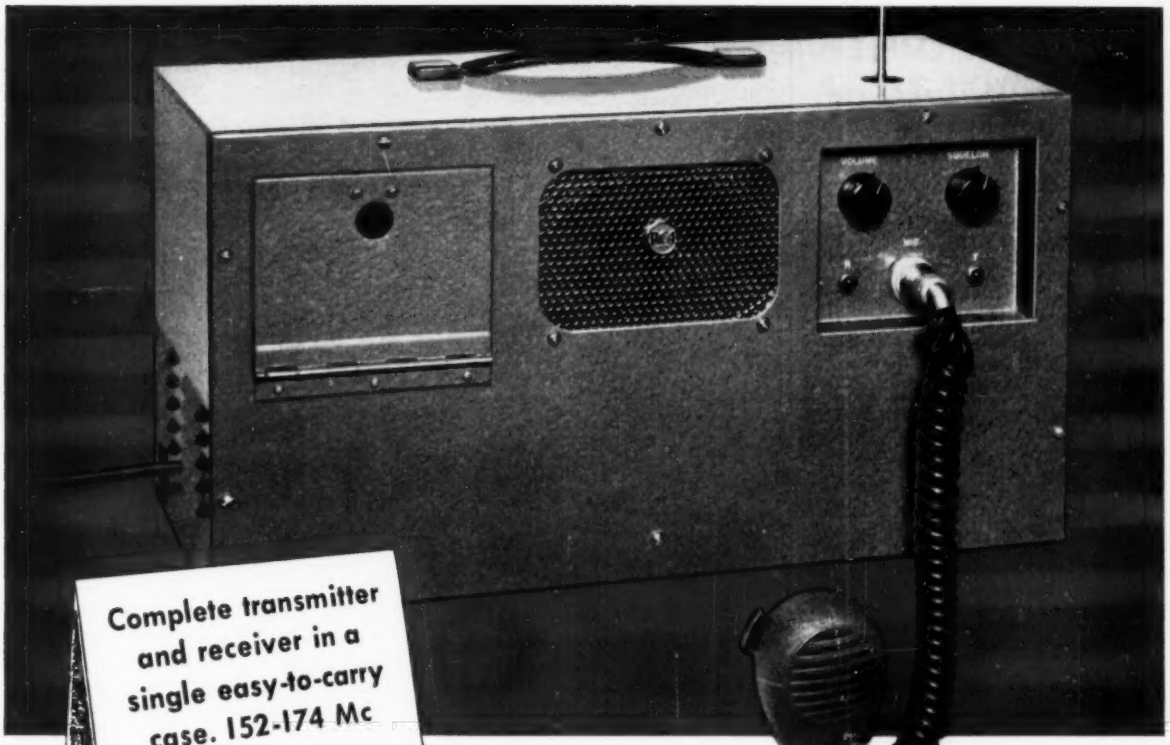

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Management, joint morning and afternoon sessions.

Annual Society dinner, evening.

Thursday, September 17

Choice of three guided field trips.

Ladies' Activities

Ladies are cordially invited. There will be a special reception room available to the ladies throughout the meeting, and an early get-acquainted tea has been planned. In addition several delightful auto trips have been arranged to scenic and historic places of interest in the Pikes Peak region.

Ladies are especially invited to the Chuck Wagon dinner in the Garden of the Gods on September 15 (sports wear *de rigueur*), and to the annual Society dinner on September 16 (informal attire suitable).

Division Meetings

Division of Education

Monday, September 14

G. B. Hartman, Chairman
K. P. Davis, Vice Chairman
A. E. Wackerman, Secretary

Morning Session

Panel Discussion: "Effective Teaching." Moderator: Archie E. Patterson, School of Forestry, University of Georgia, Athens, Ga.

1. "Essentials of Effective Instruction." Walter F. McCulloch, School of Forestry, Oregon State College, Corvallis, Ore.

2. "Effective Use of Laboratory and Field Trip Time." Myron Krueger, School of Forestry, University of California, Berkeley, Calif.

3. "Use of Tests and Examinations as a Teaching Tool." Frank Kaufert, School of Forestry, University of Minnesota, St. Paul, Minn.

4. "Methods of Teacher Self-Improvement." George W. Thomson, Department of Forestry, Iowa State College, Ames, Iowa.

5. Business Meeting.

Afternoon Session

1. Report of Committee appointed to study the need for a proposed Journal of Forest Science. Chairman, Stephen Spurr, Department of Forestry, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

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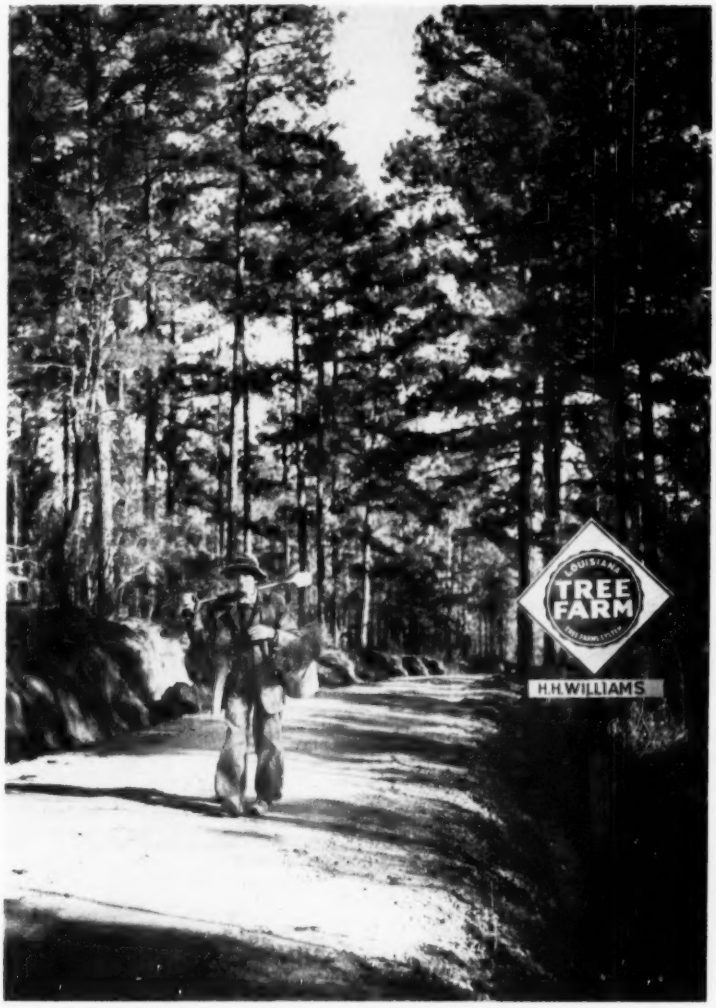

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2. Panel Discussion: "Better Forestry Apprenticeship." Moderator: Ross Williams, School of Forestry, Montana State University, Missoula, Mont.

"Study-Work Arrangements."

"Practical Work While in College."

"Increased Effectiveness in Teaching Major Professional Courses when Students have had a Reasonable Amount of Practical Training."

"Value of 'On-the-Job' Training Prior to Graduation."

"Post Graduate Training and Indoctrination."

Industry:

Public Agencies:

3. "What Employers Expect of Forestry School Graduates." William C. Finley, American Walnut Manufacturers Association, Chicago, Ill.

Division of Silviculture

Monday, September 14

Russell K. LeBarron, Chairman
Philip A. Briegleb, Vice Chairman
Jesse H. Buell, Secretary

Morning Session

1. "Thinning of Young Douglas-fir in Western Washington." Philip G. Haddock, College of Forestry, University of Washington, Seattle, Wash. and Svend O. Heiberg, College of Forestry, State University of New York, Syracuse, N. Y.

2. "Silvicultural Foundations for National Forest Cutting Practice in the Ponderosa Pine Stands of the Southwest." James A. Egan, U. S. Forest Service, Albuquerque, N. Mex.

3. "Blow-up Fires—Silviculture or Weather Problems?" Keith Arnold, School of Forestry, University of California, and C. C. Buck, California Forest and Range Experiment Station, Berkeley, Calif.

4. "Some Silvicultural Problems in Growing Shelterbelts on the Northern Great Plains." E. J. George, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, Mandan, N. Dak.

5. "The Role of Natural Control Factors in the Engelmann Spruce Beetle Outbreak in Colorado." Noel G. Wygant, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Fort Collins, Colo.

Afternoon Session

Panel Discussion: "The Role of Genetics in Silviculture," Moderator: George M. Jemison, Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

1. "The Scope of Forest Genetics." Scott S. Pauley, Maria Moors Cabot Foundation for Botanical Research, Harvard University, Petersham, Mass.

2. "Extensive Application of Genetics by the Silviculturist." Clemens M. Kaufman, School of Forestry, University of Florida, Gainesville, Fla.

3. "Selection in the Intensive Phase of Forest Tree Improvement." Bruce Zobel, Texas Forest Service, College Station, Texas.

4. "Importance of Hybridization in Forest Tree Improvement." J. W. Duffield, Institute of Forest Genetics, U. S. Forest Service, Placerville, Calif.

5. "Opportunities in Disease and Insect Control Through Genetics." A. J. Riker, College of Agriculture, University of Wisconsin, Madison, Wis.

6. General discussion by panel.

7. Open discussion by members.

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Joint Meeting

Monday, September 14

Division of Private Forestry

E. F. Heacox, Program Chairman
Julian McGowin, Vice Chairman
N. T. Barron, Secretary

Division of Forest Products

Fred E. Dickinson, Chairman
R. C. Fraunberger, Vice Chairman
Lincoln A. Mueller, Secretary

Morning Session

1. "The Forest Service and Private Forestry." W. S. Swingler, Branch of State and Private Forestry, U. S. Forest Service, Washington, D. C.

2. "The Evaluation of Forest Management Practices." W. D. Hagenstein, Industrial Forestry Association, Portland, Ore., and H. D. Bennett, Appalachian Hardwood Manufacturers, Inc., Cincinnati, Ohio.

3. "Industrial Forestry Research." Clarence Richen, Crown-Zellerbach Corporation, Portland, Ore.

4. "Chemical Debarking." Hugh Wilcox, State University of New York, College of Forestry, Syracuse, N. Y.

Business meeting.

Afternoon Session

Business meeting; election of officers for 1954.

Theme: Trends and Possibilities in Forest Products Utilization in the Rocky Mountain Territory.

1. "The Swedish Gang Sawmill for Rocky Mountain Woods." Larry O'Neil, Forest Products Company, Kalispell, Mont.

2. "The Use of Rocky Mountain Species for Pulping." H. E. Troxell, School of Forestry and Range Management, Colorado A & M College, Fort Collins, Colo.

3. "Suitability of Rocky Mountain Species for Veneer and Plywood." I. V. Anderson, Forest Utilization Service, U. S. Forest Service, Missoula, Mont.

4. "Hardboard Manufacturing Possibilities for the Rocky Mountain Territory." John B. Grantham, Oregon Forest Products Laboratory, Corvallis, Ore.

5. "Salvaging Lumber Shorts by End Jointing." Boyd D. Richards.

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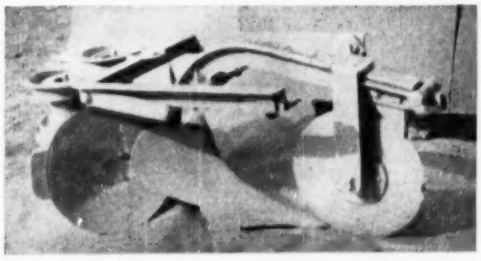

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Division of Public Relations

Monday, September 14

Albert Arnst, Chairman
Ralph Unger, Vice Chairman
C. W. Mattison, Secretary

Evening Session

1. "Public Relations Problems of Public Land Administrators in the Rocky Mountain Region." Joseph N. Hessel, Division of Information and Education, U. S. Forest Service, Denver, Colo.
2. "Public Relations Problems of Public Land Users in the Rocky Mountain Region." Willard Simms, *The Record Stockman*, Denver, Colo.
3. Motion picture: "The Enemy Is Fire," produced by Oregon and Washington Forest Fire Associations.

Division of Forest Economics and Policy

Monday, September 14

E. V. Zumwalt, Chairman
John Zivnuska, Vice Chairman
William A. Duerr, Secretary

Evening Session

Theme: "Economics of Spruce Beetle Control in the Rocky Mountains."

1. "Technology of the Problem." B. H. Wilford, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Fort Collins, Colo.
2. "Control and Salvage Policy." Arthur L. Nelson, U. S. Forest Service, Denver, Colo.
3. "Economic Interpretation." Henry J. Vaux, School of Forestry, University of California, Berkeley, Calif.
4. Business Meeting.

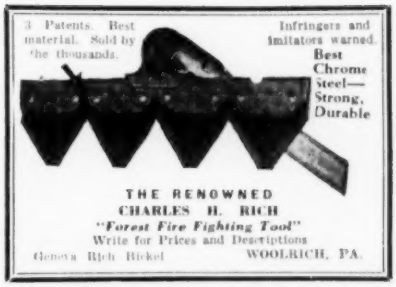
General Meeting

Tuesday, September 15

Harry R. Woodward, Chairman

Morning Session

1. "Public Relations Problems in the Central Rocky Mountains." John W. Spencer, Santa Rosa, Calif. (Former regional forester, U. S. Forest Service, Denver, Colo.)
2. "Problems Facing Forest Management in the Central Rocky Mountains." Jesse H. Buell, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
3. "Watershed and Range in the Central Rocky Mountains." Harold G. Wilm, Division of Forest Influences, U. S. Forest Service, Washington, D. C.
4. "Protection Problems in the Central Rocky Mountains." Noel D. Wygant, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Fort Collins, Colo.
5. "Recreation and Wildlife Problems in the Central Rocky Mountains." J. V. K. Wagar, School of Forestry and Range Management,



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Discussion.

Society Affairs

Tuesday, September 15

Geo. L. Drake, President
E. L. Demmon, Vice President

Afternoon Session

Report of the President, Geo. L. Drake.

Report of the Executive Secretary, Henry Clepper.

Report of the Editor, Arthur B. Meyer.

Report of Committee on Accrediting, Myron Krueger, Chairman.

Report of Council Committee on Membership, Frank H. Kaufert, Chairman.

Report of Committee on International Relations, Tom Gill, Chairman.

Report of Committee on Safety, Seth Jackson, Chairman.

Report of Committee on Civil Service, M. K. Goddard, Chairman.

Report of Committee on Forest Types, F. H. Eyre, Chairman.

Report of Committee on *The Foresters' Manual*, E. W. Littlefield, Chairman.

Open forum discussion.

Chuck Wagon Dinner

Tuesday, September 15

Garden of the Gods

An outdoor dinner and evening of entertainment, western style, put on by the Colorado Springs Junior Chamber of Commerce.

Division of Forest Management

Wednesday, September 16

DeWitt Nelson, Chairman
Gordon D. Fox, Vice Chairman
Stephen N. Spurr, Secretary

Morning Session

Photography and Mensuration

1. "The Control Method of Forest Management in an Age of Aerial Photography." Ashbel F. Hough, Northeastern Forest Experiment Station, Upper Darby, Pa.

2. "Use of Aerial Surveys in Forest Management." Kendall B. Wood, K. B. Wood and Associates, Inc., Portland, Ore.

Discussion leader: Herbert Jensen, Hammon, Jensen and Wallen, Consulting Foresters, Oakland, Calif.

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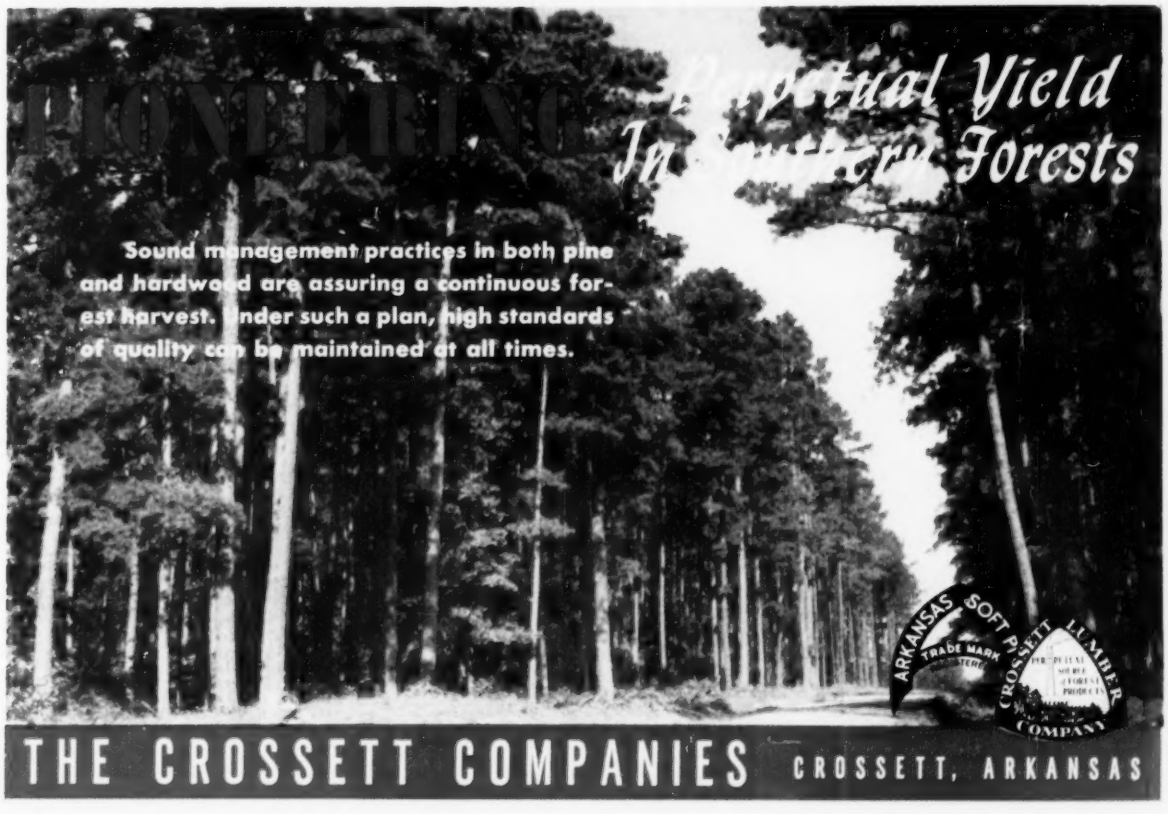
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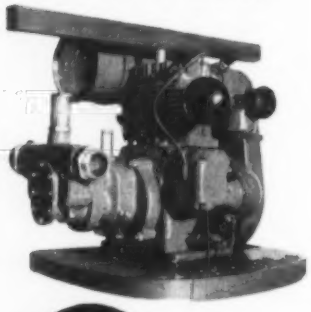

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3. "The Continuous Inventory of Ponderosa Stands in the Southwest." Dean Cutler, U. S. Forest Service, Albuquerque, N. Mex.

4. "Simplified Computation of Volume and Growth." Stephen H. Spurr, School of Natural Resources, University of Michigan, Ann Arbor, Mich.

Afternoon Session

Forest Administration

1. "The Administrative Aspects of Forest Management." Earl W. Loveridge, U. S. Forest Service, Washington, D. C.

2. "Administrative Management of a Large State Forestry Department." B. L. Orell, Division of Forestry, State Department of Conservation and Development, Olympia, Wash.

Discussion leader: DeWitt Nelson, Division of Forestry, State Department of Natural Resources, Sacramento, Calif.

Forest Protection

1. "Maintaining an Effective Organization to Control the Occasional Large Fire." Mayhew Davis, U. S. Forest Service, Albuquerque, N. Mex.

2. "The Significance of Weather Modification to a Forester." A. A. Brown, Division of Fire Research, U. S. Forest Service, Washington, D. C.

3. "Lightning Fire Research in the Northern Rocky Mountains." Jack S. Barrows, Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Mont.

4. "The Use of Trap Logs in the Control of Engelmann Spruce Beetle." Roy H. Nagel, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Fort Collins, Colo.

5. "Harvesting of Beetle-Killed Engelmann Spruce." Walter H. Schaeffer, College of Forestry, University of Washington, Seattle, Wash.

Joint Meeting

Wednesday, September 16

Division of Watershed Management

H. G. Wilm, Chairman
Marvin D. Hoover, Vice Chairman
Robert E. Dils, Secretary

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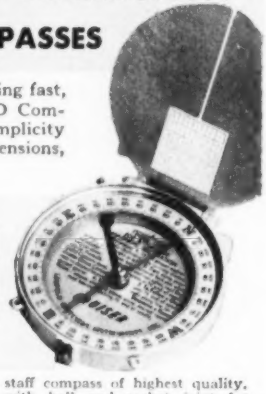

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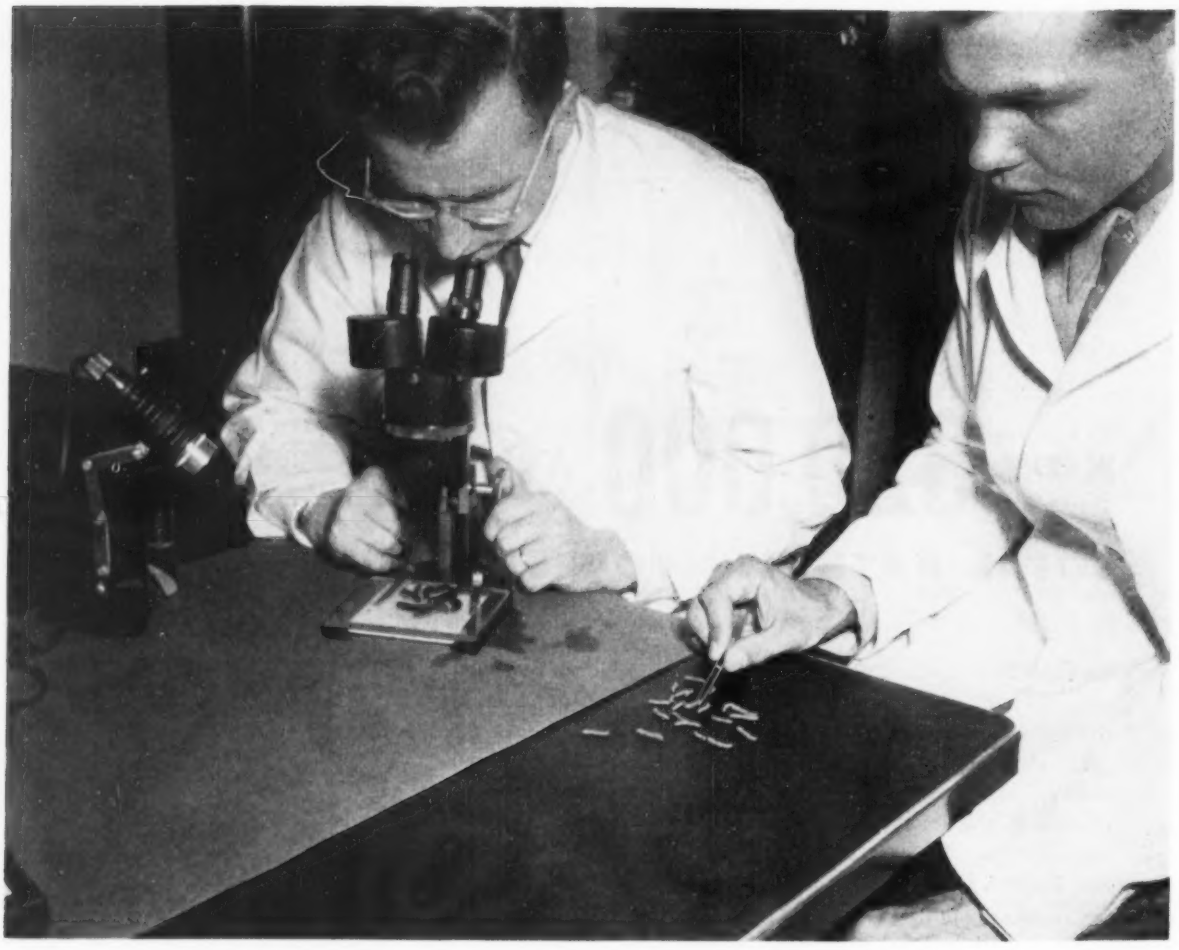

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Division of Range Management

Raymond Price, Chairman
M. W. Talbot, Vice Chairman
Grant A. Harris, Secretary

Morning Session

1. Introductory remarks by chairman of Division of Watershed Management.

2. "An Evaluation of the Effect of Watershed Treatment on Flood Runoff in the New England-New York River Basin Area." Norman R. Tripp and D. E. Whelan, both of Northeastern Forest Experiment Station, Upper Darby, Pa.

3. "Soil Moisture Trends under Old Field and Forest Cover in the Hill Section of Southern Illinois." William R. Boggess, University of Illinois, Robbs, Ill.

4. "Changes in Streamflow Characteristics Brought About by Cutting Forest Vegetation." E. A. Johnson, Southeastern Forest Experiment Station, Asheville, N. C.

5. "Effects of the Forest Floor on the Disposition of Rainfall in Pine Stands." P. B. Rowe, California Forest and Range Experiment Station, Berkeley, Calif.

Afternoon Session

1. Introductory remarks by chairman of Division of Range Management.

2. "Range Condition as Defined by Forage Production and Watershed Values." E. H. Reid, Forest Service, U. S. Department of Agriculture, Washington, D. C.

3. "Recent Developments in California Range Management." M. W. Talbot, California Forest and Range Experiment Station, Berkeley, Calif.

4. "Condition and Trend of Mountain Rangeland as Affected by Erosion." Lincoln Ellison, Intermountain Forest and Range Experiment Station, Ogden, Utah.

5. "Surface Runoff and Erosion from Pine Grasslands of the Colorado Front Range." E. G. Dunford, Pacific Northwest Forest and Range Experiment Station, Portland, Ore.

6. "Range Management in the Southwest." Walter L. Graves, U. S. Forest Service, Taos, N. Mex., and C. E. McDuff, U. S. Forest Service, Albuquerque, N. Mex.

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Write for illustrations and data on the complete line of Pacific Pumpers, hose and accessories.

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One Man Chain Saw

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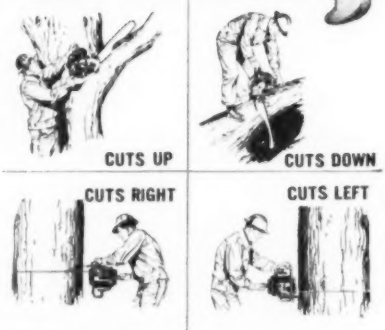
30 pounds—5.5 Brake horsepower

Here is the saw for the man who wants power . . . *extra, dependable power.* It's the saw for the professional woodcutter, the man whose income depends on his saw. It's the saw that gives you more power per pound than any other saw.

Pick it up and handle it. You'll be amazed at its light and balanced weight. Pull the starter and see how easily and quickly it starts. But most important, let it get its teeth in a tree and see how lightning fast it cuts. Watch this powerful Homelite purr through a 20-inch trunk in as little as 20 seconds. See how quickly and easily it brings down timber 4 feet or more in diameter.

Designed and built by Homelite . . . manufacturers of outstanding gasoline-engine-driven units for more than 30 years . . . this new Homelite Model 5-30 has everything you want in a chain saw: Automatic clutch, all angle carburetion, positive chain lubrication, quick starting, weatherproof performance, rugged and simple design and money-saving dependability for which Homelite has been famous for generations.

MODEL 5-30



Cuts in any position . . . up, down, or upside down . . . on all types of cut . . . felling, bucking, boring, notching, trimming or undercutting.

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Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec.

7. "Evaluation of Range-Watershed Conditions of Mountain Grasslands in Western Colorado." E. J. Dortignac, Southwestern Forest and Range Experiment Station, Tucson, Ariz., and G. T. Turner, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Joint Meeting

Wednesday, September 16

Division of Forest Recreation

C. Frank Brockman, Chairman
Harthon L. Bill, Vice Chairman
William N. Parke, Secretary

Division of Forest-Wildlife Management

Ernest Swift, Chairman
J. V. K. Wagar, Vice Chairman
Galen Pike, Secretary

Morning Session

1. "Recreational Activities and Their Coordination with Other Forest Values on the Pike National Forest." Raymond E. Phillips, Pike National Forest, Colorado Springs, Colo.

2. "Recreational Activities—A Potent Public Relations Force in Forestry." Albert Arnst, *The Timberman*, Portland, Ore.

3. "Interpretation as a Means of Developing Public Responsibility for the Care of Public Lands." Edwin C. Alberts, Rocky Mountain National Park, Estes Park, Colo.

4. "Problems of Winter Use on Forest Lands." Felix C. Koziol, Wasatch National Forest, Salt Lake City, Utah.

Afternoon Session

1. "Wildlife Management in Relation to Multiple Use." Ralph R. Hill, U. S. Forest Service, Denver, Colo.

Discussion leader: Ralph E. Crowell, Mark Twain National Forest, Springfield, Mo.

2. "The Problems of Supervised Hunting on Public Lands." George H. Kelker, School of Forest, Range and Wildlife Management, Utah State Agricultural College, Logan, Utah.

Discussion leader: Gilbert N. Hunter, Colorado Game and Fish Commission, Denver, Colo.

3. "Wildlife Values in Western Wilderness Area Management." James P. Gilligan, University of Michigan, Ann Arbor, Mich.

4. "Management of Black Hills Deer." Lester M. Berner, Department of Game, Fish and Parks, Pierre, S. Dak.

5. Division business meeting.

Society Dinner

Wednesday, September 16

William G. Meginnies, Toastmaster.

Address, J. D. Pender, attorney and conservationist, Denver, Colo.

Entertainment. The Pejn Indian dancers in a program of traditional dances of the Plains Indians in authentic costume; and Bob Cook's exhibition square dance set in a demonstration of typical Western pioneer American dances.

Field Trips

Thursday, September 17

A choice will be offered of three guided field trips to places of interest in the nearby Rocky Mountain area.

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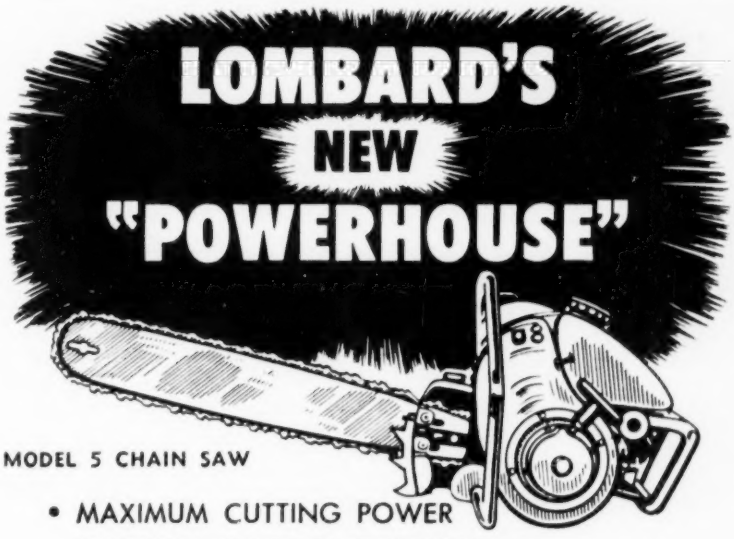

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Here's tremendous POWER . . . brilliantly built-in to this light-weight, perfectly balanced saw. Its 5 H. P. sends the sharp teeth whizzing through even the toughest of woods.

For "thrill-of-a-lifetime" cutting, just sink this LOMBARD powerhouse into a man-size log . . . and watch the chips fly!

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Best by every chain saw test. Just try one and you'll see.

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Transportation by bus will be available at moderate cost. Lunches will be served enroute.

Monument Nursery

Trip number 1 to the Monument Nursery. Cost, $2 including transportation and luncheon. Leave 10 a.m.; return 3 p.m. Round-trip distance, 40 miles.

The Monument Nursery, operated by the U. S. Forest Service, is 20 miles north of Colorado Springs. Seeding was started in 1907. Production is 1½ to 2½ million trees annually of Douglas-fir, ponderosa pine, Engelmann spruce, and lodgepole pine. Total production has been 60 million trees, both seedlings and transplants. The output is used for reforestation on the national forests of the Rocky Mountain and Black Hills regions.

Manitou Experimental Forest and Range

Trip number 2 to the Manitou Experimental Forest and Range. Cost, $2 including transportation and luncheon. Leave 9 a.m.; return 4:30 p.m. Round-trip distance 60 miles.

This research center, 28 miles northwest of Colorado Springs, is a unit of the Rocky Mountain Forest and Range Experiment Station. Its area is 26 square miles and is representative of the soil and vegetation of the Front Range.

It was established in 1936 to study problems of land use in relation to the management of all resources of the Front Range. Research is centered around range management, artificial revegetation, and watershed management. Foresters and range managers will see research work in progress on grasses, methods of stocking, types of range conditions, measurement of precipitation, and the relation of vegetative cover to accelerated runoff and erosion.

Gold Camp Road

Trip number 3 to Cripple Creek. Cost, $2.50 including transportation and luncheon. Leave 8:30 a.m.; return 5 p.m. Round-trip distance, 100 miles.

This trip is one of unusual scenic and historical interest. The route is over the famous Gold Camp Road, constructed on the road bed of the old Colorado Springs-Cripple Creek Railroad, which winds through tunnels and over the mountains to the mining camp of Cripple Creek and to Victor. The return will be by way of Gillette and Divide, thence down Ute Pass.

The party taking this tour will encircle Pike's Peak, and will have splendid views of the plains and the Sangre de Cristo Mountains to the South and West.

Other Trips Available

In addition to the foregoing guided trips, opportunities will be available for numerous individual tours to places of regional interest. The summit of Pike's Peak can be reached by automobile or by cog railroad. An incline-railroad runs up the east slope of the peak.

An interesting trip over mountain roads with many scenic attractions may be made to Devil's Head Mountain where the Pike National Forest maintains a lookout station.

Several good highways traverse the Pike National Forest. U. S. 24 from Colorado Springs through South Park to Buena Vista crosses the south end of the forest. U. S. 285 from Denver to Antero Junction crosses the northern portion. At Lake George on U. S. 24 two side trips may be made: one to the Eleven-mile Canyon recreational area and reservoir, a water storage

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area for Denver; and the other up Tarryall Creek to Jefferson.

The silviculturist and forest manager will find the Fraser Experimental Forest of unusual interest. It is near Fraser, Colo., in the high country on the Arapaho National Forest west of Denver. From Fraser, the trip may be continued to Grand Lake and across the Trail Ridge Road into famous Rocky Mountain National Park, from which one may return south to Denver or north to Fort Collins, site of Colorado A & M College School of Forestry and Range Management and headquarters for the Rocky Mountain Forest and Range Experiment Station.

These suggested individual trips do not exhaust the number available. Many shorter sight-seeing tours may be taken in the vicinity of Colorado Springs, and representatives of local agencies will be on hand to assist those desiring them.

Transportation

Colorado Springs is easily accessible by airlines, railroads, and highways.

The airlines are Braniff, Continental, and Monarch.

The railroads are Chicago, Rock Island and Pacific; Atchison, Topeka and Santa Fe; Denver, Rio Grande & Western; Colorado and Southern (Burlington); and Missouri Pacific.

Three U. S. Highways pass through the city—U. S. 85-87, north and south; and U. S. 24, east and west.

Hotel Reservations

A special Society committee will handle requests for hotel reservations, which will be filled in the order received. This committee cannot be responsible for failure to obtain rooms by those making reservations direct with hotels.

A reservation coupon has been carried in the past three issues of the JOURNAL, June page 457, July page 534, and August page 592, for your convenience in requesting hotel rooms. Please send your request to the committee to avoid delay and confusion. Room assignments will be made promptly, and you will receive a confirmation in two weeks or less. Anyone desiring to make a reservation without tearing a page from the JOURNAL may do so simply by supplying the necessary information in a letter addressed to the committee.

The Antlers Hotel is the headquarters for the meeting. But since the Antlers cannot accommodate everyone, other hotels and motels in the city will cooperate in housing members.

There follows a list of hotels available for this meeting and their daily rates. All except the Broadmoor are within five minutes' walking time of the City Auditorium where most of the sessions will be held. All rates listed are European plan (without meals).

In addition there are numerous good motels and tourist lodges within two to five miles of City Auditorium. Those who will have their own automobile transportation will find these motels quite convenient and somewhat less expensive than the city hotels.

Hotels

All hotels listed are within five minutes' walking time of City Auditorium, except the Broadmoor, which is 4½ miles. Daily room rates with bath (European plan, without meals) are shown.

Antlers Hotel, Cascade and Pikes Peak Avenues, the headquarters hotel for the meeting. Single rooms, $7 to $9. Double and twin-bed rooms, $9 to $11. Suites, $12 to $20.

Alta Vista Hotel, 118 North Cascade Avenue. Single rooms, $4 to $6. Double and twin-bed rooms, $6 to $9.

Broadmoor Hotel (4½ miles to City

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Traditional K&E care and precision go into the making of these useful forestry instruments . . . K&E Right Angle Instruments and The K&E Hand Level with a right angle feature.

These instruments are *rugged* . . . designed to stand up without the need of constant adjusting even under the rough usage of forest work.

THE RIGHT ANGLE PRISM

This compact instrument consists of a single ground triangular prism and it, therefore, cannot get out of adjustment. A plumb bob can be attached to the hook of the handle.

THE RIGHT ANGLE MIRROR

This instrument gives a slightly larger field of view and is adjustable. As an added feature, a small plumb bob is conveniently stowed in the handle.

THE DOUBLE RIGHT ANGLE PRISM

Consisting of two ground pentaprisms separated by a plano-parallel element, it can be *placed on a line between two points* and a third point at right angles can be sighted. A plumb bob can be attached or the instrument can be mounted on a staff.

THE HAND LEVEL WITH A RIGHT ANGLE FEATURE

Here is a dual-purpose instrument with all of K&E's famed precision. While its principal use is as a hand level, it offers the right angle feature as well. Note the flat base permitting use on a level board.

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Auditorium). Single rooms, $10. Double and twin-bed rooms, $15.

Acacia Hotel, 104 East Platte Avenue. Single rooms, $4.50 to $6. Double and twin-bed rooms, $7 to $9.

The Alamo Hotel, 126 South Tejon Street. Single rooms, $4 to $6. Double and twin-bed rooms, $6 to $14.

Joyce Hotel, 10 South Weber Street. Single rooms, $6. Double rooms, $8. Twin-bed rooms, $10 to $12. Double rooms with connecting bath, $5 and $6.

Motels and Tourist Courts

The Hotel Reservations Committee has listed 60 motels and tourist courts in Colorado Springs and Manitou Springs, all within two to five miles of City Auditorium.

Daily rates range from $3.50 to $10 for one or two persons; $5 to $15 for three or four persons; and $8.50 to $20 for four to six persons.

Members, who request reservations from tourist courts, will receive, with their confirmation of the reservation, a notice to send an advance payment for one day. This is necessary to hold the reservation.

Program Committee

The chairman of the committee in charge of the program for the meeting is J. V. K. Wagar, School of Forestry and Range Management, Colorado A & M College, Ft. Collins, Colo.

The other members of the committee are David H. Canfield, T. J. Fillas, W. G. McGinnies, and Harry R. Woodward.

Arrangements Committee

The chairman of the Committee on Arrangements is Raymond E. Phillips, U. S. Forest Service, Colorado Springs, Colo.

Assisting Mr. Phillips and heading up special task committees are the following:

Information and Publicity, J. N. Hessel.

Registration, R. B. McKennan.

Reception and Welcome, David S. Nordwall.

Society Dinner, Henry M. Shank.

Chuck Wagon Dinner, Ralph R. Hill.

Hotel Reservations, Elmer R. Miller.

Exhibits, Clinton H. Wasser.

Projection and Amplifying, David H. Canfield.

Meeting Rooms, Jacob Roeser, Jr.

Field Trips, Everett Lee.

Ladies' Activities, Mrs. R. E. Phillips.

Sixth Call for Council Nominations

All voting members are hereby notified that the regular biennial election will be held December 5, 1953. A president, vice president, and nine other members of the Council will be elected for the two-year term 1954-1955.

The present Council is listed in the box on page 662. Any or all of these incumbents may be renominated, provided they accept the nomination in writing.

President Drake has announced that he will not be a candidate for reelection.

Membership on the Council is restricted by the Constitution to Members (formerly Senior Members) and Fellows. Any Member or Fellow is eligible to hold office who is in good standing and who accepts the nomination in writing and declares his willingness to serve if elected.

Each voter will have an opportu-

MUSSER TREES are GROWING IN ALL 48 STATES!

20 Million TREES a year!

Each year MUSSER teams plant over 20 million more trees, which will soon become:

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MUSSER Customers KNOW their trees have the RIGHT START. We offer world's largest tree selection of Quality plus Volume. You profit from economies of our huge volume. Note our low quantity prices at right:

SPECIAL SCOTCH PINE
2 yr. seedlings 4-8" $35. per 1000
NORWAY SPRUCE (MUSSER Special)
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Also shade and hardwood seedlings. Write today for Christmas Tree Growers' Guide and complete wholesale stock list; or tell us your requirements.

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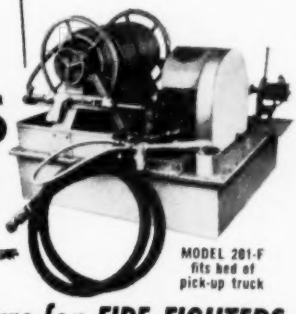

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nity to ballot on all candidates for office. Council members are elected in accordance with the system of proportional representation. The procedure of proportional representation will be explained in a later issue of the JOURNAL. It is the system by which the Society has been electing Council members for two decades. Candidates for the office of president are voted on separately; the candidate who receives the highest vote is declared elected president, and the candidate who receives the next highest vote is declared elected vice president.

How Nominations Are Made

The Constitution (Article VIII, Section 2) states the conditions under which nominations are made by petition.

1. Each petition shall name but one candidate.
2. All candidates must be eligible to hold elective office.
3. A petition shall bear the signatures of at least ten voting members who at the time of signing the petition are eligible to vote in the coming election. (Eligible voting members are Junior Members, Members, and Fellows in good standing.)
4. A voting member may not sign more than one nominating petition for President or more than one nominating petition for a member of the Council. That is, he may sign two, but no more.
5. Petitions must be in the Society office by October 2, 1953.

The Society has no special form for submitting nominating petitions. They may be written as follows:

We, the undersigned voting members of the Society of American Foresters, hereby nominate John Doe, a Member (or Fellow), for the office of president (or member of the Council) for the two-year term 1954-1955.

All nominating petitions should be sent promptly to the Society office. The executive secretary will gladly provide information about nominating or election procedure.

Nominations Received

On the day this issue went to press the following nominations had been received.

For President: Walter J. Damtoft, Canton, N. C. (Council member, 1944-1947.)

E. L. Demmon, Asheville, N. C. (Vice president, 1952-1953.)

Gordon D. Marckworth, Seattle, Wash. (Council member, 1950-1953.)

This Fire Weather Indicator sign at the Deer Creek Shop and Radio Headquarters of the Skagit Unit is a part of the intensive fire protection system now operated by the Puget Sound Pulp & Timber Co. on its recently dedicated Tree Farm.

One of the West's Newest Tree Farms

● On June 12, 1953, our company formally dedicated the Skagit Unit of its Tree Farm, the first industrial Tree Farm to be established in Skagit county, in the far Northwest corner of the United States.

● This tract of 33,680 acres comprises in part the land and timber holdings of two older lumber companies which began logging in the area some fifty years ago. The ability of Nature to restore her lands in the Douglas Fir region has abundant testimony in the 27,000 acres of new forest of all ages on the Skagit Unit which are now producing over 10,000,000 b.f. in growth yearly on the once-logged ground.

● Purpose of the Tree Farm is production of continuous supplies of wood for our bleached sulphite pulp mill at nearby Bellingham, a pioneer in the Western wood pulp industry. In addition to bleached sulphite pulp, this modern plant produces container board, industrial alcohol, lignin derivatives and other by-products, all of which contribute to a high utilization factor.

● Through the application of increasingly intensive harvesting practices designed to effect ever closer utilization, through planting and seeding of recently logged-over areas, and through the organization of a thorough-going fire protection system, our company seeks to increase present yearly growth to 16 million b.f.

● The lifeblood of future forest industries in the Pacific Northwest is found on the timber growing lands in the area. Our intent is to manage our lands accordingly.

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DeWitt Nelson, Sacramento, Calif. (Council member, 1948-1951.)

For the Council: William J. Brown, Neenah, Wis. (Council member, 1952-1953.)

C. H. Coulter, Tallahassee, Fla.

D. B. Demeritt, Bangor, Maine. (Council member, 1950-1953.)

Stanley G. Fontanna, Ann Arbor, Mich. (Council member, 1950-1951.)

W. C. Hammerle, New Orleans, La.

P. D. Hanson, Missoula, Mont.

Verne L. Harper, Washington, D. C.

E. F. Heacox, Tacoma, Wash.

D. E. Hess, Gettysburg, Pa.

R. Vance Miles, Jr., Tuscaloosa, Ala.

Galen W. Pike, Duluth, Minn.

Carl A. Rishell, Washington, D. C.

J. Nelson Spaeth, Urbana, Ill.

John W. Squires, Jackson, Miss.

T. D. Stevens, East Lansing, Mich.

J. Herbert Stone, Portland, Ore.

Charles L. Tebbe, Philadelphia, Pa.

J. V. K. Wagar, Fort Collins, Colo.

R. H. Westveld, Columbia, Mo. (Council member, 1952-1953.)

Edwin G. Wiesehuegel, Norris, Tenn.

The Nominating Committee will make no nominations of its own unless the voting membership fails to make the required minimum number of nominations by petition. Voting members should accordingly get busy and make their own nominations.

HAROLD B. SHEPARD, *Chairman,*
Nominating Committee

Nominations for Grade of Fellow Now Open

All Members (formerly Senior Members) and Fellows of the Society are hereby advised that nominations for the grade of Fellow are now open. The election of Fellows will be held at the time of the Society's regular biennial election, December 5, 1953.

As defined by the Constitution (Article III, Section 6), "Fellows shall be foresters of outstanding achievement as leaders in responsible directive or distinctive individual work of a fruitful character. They shall be elected from the Members and shall be engaged in forestry work at the time of their election."

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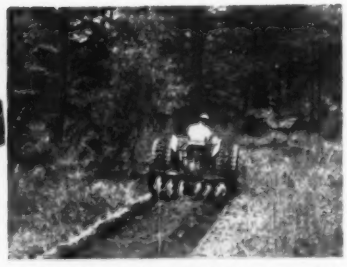

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Nominations by Petition

The procedure for placing Members in nomination for the grade of Fellow is by petition. The Society has no printed form for this purpose; the petition may be typewritten thus:

We, the undersigned Members and Fellows of the Society of American Foresters, hereby nominate _____ for election to the grade of Fellow in 1953.

Remember these simple rules:

1. A petition may not name more than one candidate.

2. It must be signed by 25 Members or Fellows in good standing.

3. It should be accompanied by a factual, not eulogistic, biographical sketch of at least 200 words giving an account of the nominee's professional career and accomplishments.

4. It must be received in the executive office of the Society in Washington, D. C., not later than October 2, 1953.

The executive employees of the Society cannot be responsible for obtaining signatures on partially completed petitions or on petitions incomplete by reason of unacceptable signatures (that is, signatures of other than Members and Fellows in good standing).

Nominations Received

On the date of going to press, the following Members had been nominated for the grade of Fellow:

For Fellow: H. O. Cook, Mass.
Charles S. R. Cowan, Wash.
George L. Drake, Wash.
Paul M. Dunn, Chile
Charles H. Flory, S. C.
George A. Garratt, Conn.
Leo A. Isaac, Ore.
Frank H. Kaufert, Minn.
Earl W. Loveridge, D. C.
R. E. McArdle, D. C.
Woodbridge Metcalf, Calif.
Elwood B. Moore, N. J.
R. R. Reynolds, Ark.
F. X. Schumacher, N. C.
T. Schantz-Hansen, Minn.
P. C. Wakeley, La.
George O. White, Mo.
Fred G. Wilson, Wis.

Election Procedure

Fellows are not elected by the membership at large, but by a board of electors which consists of all present

(Continued on page 691)

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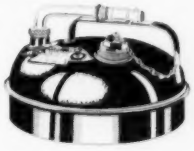

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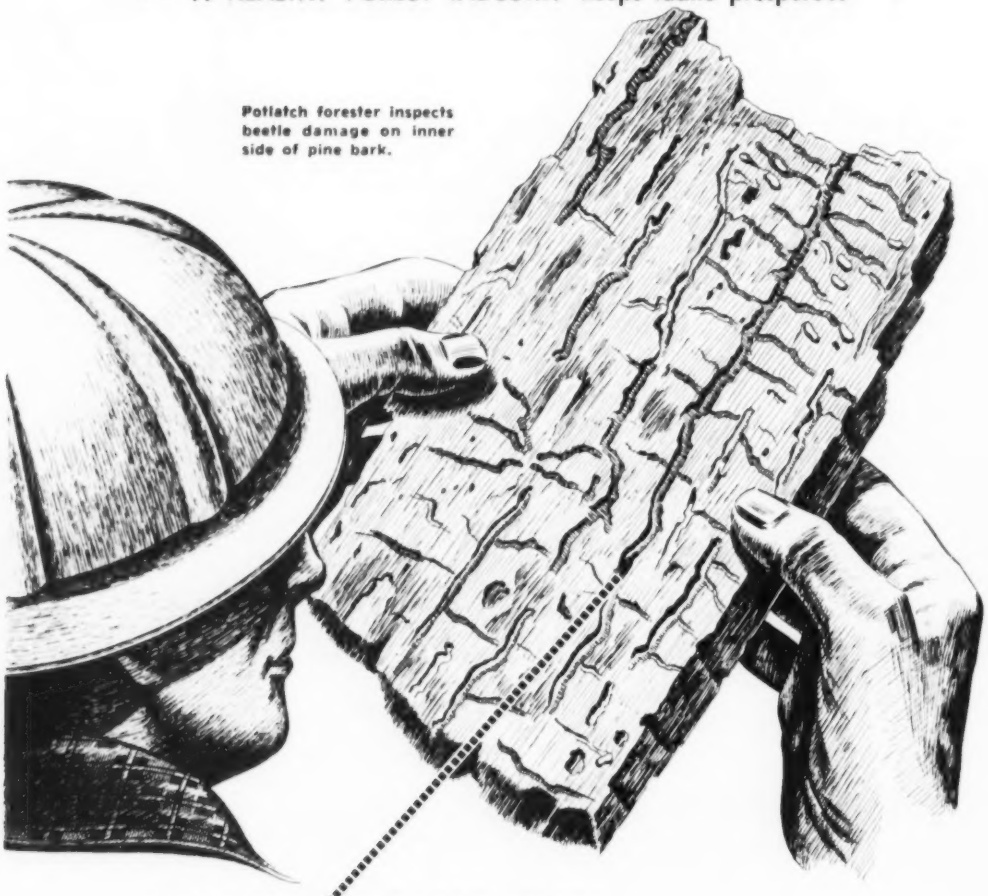

Potlatch forester inspects beetle damage on inner side of pine bark.

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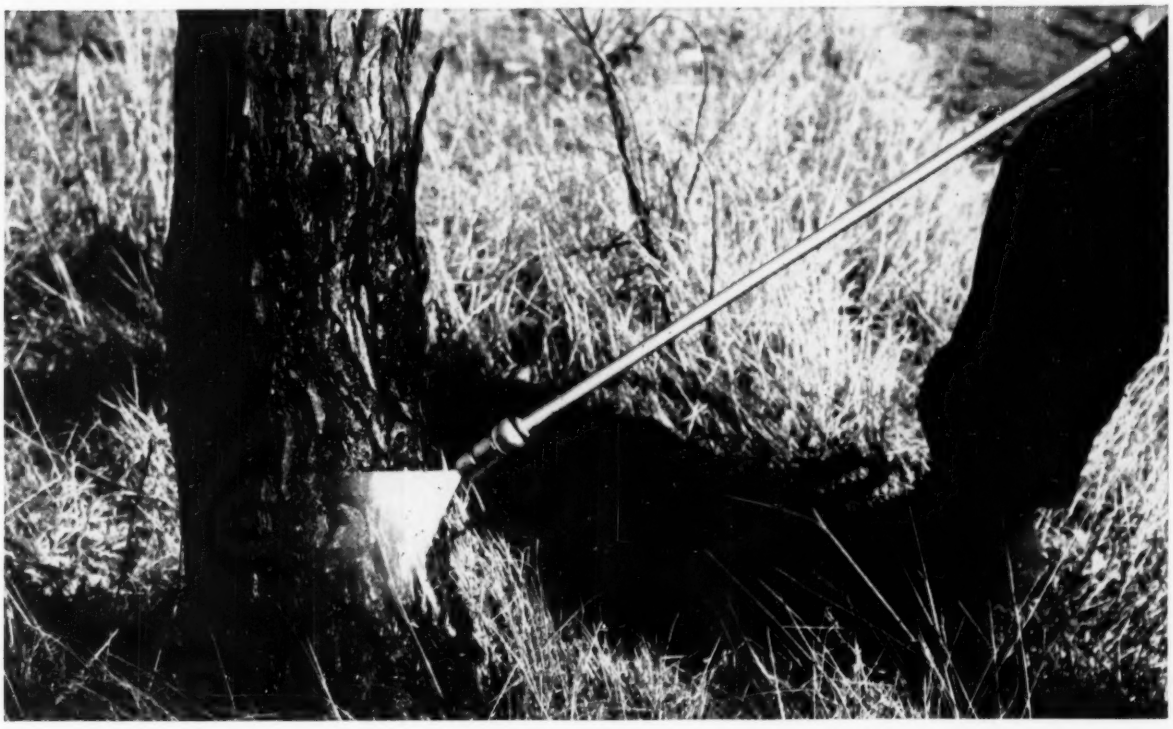

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Fellows and the present Council. (A Council member who is also a Fellow has but one vote.)

To win election a candidate must receive an affirmative vote of not less than one-half the total votes cast.

Significance of the Grade

The highest membership distinction that can be conferred by the Society, this grade is awarded in recognition of outstanding achievement. Fellows do not pay increased dues; their dues are the same as those of Members.

Since the Society was founded in 1900, there have been 91 Fellows elected. At the present time the number of living Fellows is 62.

Since the last election in December 1951, two Fellows have died: J. W. Girard and Ellwood Wilson.

List of Fellows

The current roster of Fellows follows. The state in which each Fellow is domiciled and the year of his election are shown after his name.

Allen, Shirley W., Michigan, 1948.
Baker, Fred S., California, 1949.
Besley, Fred W., Maryland, 1940.
Brundage, F. H., Oregon, 1949.
Butler, Ovid, Maryland, 1940.
Carter, E., District of Columbia, 1942.
Chapman, H. H., Connecticut, 1922.
Clapp, Earl H., Maryland, 1930.
Clepper, Henry, Virginia, 1949.
Coffman, John D., California, 1946.
Curran, Hugh, Venezuela, 1951.
Damtoft, W. J., North Carolina, 1951.
Dana, S. T., Michigan, 1935.
Demmon, E. L., North Carolina, 1951.
Eldredge, I. F., Louisiana, 1942.
Evans, C. F., Georgia, 1949.
Ferguson, J. A., Pennsylvania, 1949.
Fischer, A. F., California, 1940.
Fritz, Emanuel, California, 1951.
Frothingham, E. H., California, 1942.
Gill, Tom, District of Columbia, 1948.
Granger, C. M., Maryland, 1946.
Greeley, W. B., Washington, 1918.
Guise, Cedric H., New York, 1951.
Guthrie, John D., Virginia, 1940.
Hall, W. L., Arkansas, 1940.
Hartley, Carl P., Maryland, 1949.
Hawes, A. F., Connecticut, 1939.
Hawley, R. C., Connecticut, 1942.
Heintzleman, B. F., Alaska, 1951.
Holmes, J. S., North Carolina, 1939.
Hosmer, Ralph S., New York, 1932.
Hunt, George M., Wisconsin, 1951.
Illick, J. S., New York, 1946.
Jeffers, D. S., Idaro, 1949.
Kelley, E. W., Montana, 1949.
Kellogg, R. S., Florida, 1949.

Society Publications: A Bibliography

Over the years the Society of American Foresters has published, or sponsored the publication of, a number of books and bulletins. Some of these publications are now out of print, but others are still available.

There follows a list of them, arranged alphabetically by title. Unless otherwise indicated, those still available may be obtained from the Society's executive office.

Published by S.A.F.

Cumulated Index for Proceedings of the Society of American Foresters (Vol. 1-11); Forestry Quarterly (Vol. 1-14); Journal of Forestry (Vol. 15-27). Compiled by Appalachian Section of American Foresters, C. F. Korstian, chairman. 111 pp. Society of American Foresters, Washington, D. C. 1930. $1. (Out of print; not available.)

Second Cumulated Index for Journal of Forestry (Vol. 28-37). Compiled by Appalachian Section, Society of American Foresters, George H. Hepting, chairman. 97 pp. Society of American Foresters, Washington, D. C. 1940. $1.

Third Cumulated Index for Journal of Forestry (Vol. 38-48). Compiled by Appalachian Section, Society of American Foresters, W. D. Miller, chairman. 64 pp. Society of American

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Available Society Publications

Third Cumulated Index
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Forestry Terminology
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Foresters, Washington, D. C. 1952. $2.

Fifty Years of Forestry in the U.S.A. Edited by Robert K. Winters, chairman, Committee on History of Forestry. 385 pp. Illus. Society of American Foresters, Washington, D. C. 1950. $4.

Forest Cover Types of the Eastern United States: Report of the Committee on Forest Types, Society of American Foresters, Ralph C. Hawley, chairman. (Three editions issued) 39 pp. Society of American Foresters, Washington, D. C. 1940. 50 cents. (Out of print; not available.)

Forest Cover Types of Western North America: Report of the Committee on Western Forest Types, Society of American Foresters, Frederick S. Baker, chairman. 35 pp. Society of American Foresters, Washington, D. C. 1945. 50 cents. (Out of print; not available.)

Forest Terminology: A Glossary of Technical Terms Used in Forestry. Ralph C. Hawley, chairman, Committee on Forestry Terminology, Society of American Foresters. 84 pp. Society of American Foresters, Washington, D. C. 1944. $2.

Forestry Terminology: A Glossary of Technical Terms Used in Forestry. 2nd edition, revised. Edward N. Munns, chairman, Committee on Forestry Terminology, Society of American Foresters. 93 pp. Society of American Foresters, Washington, D. C. 1950. $3.

Handbook of Information on Entering Positions in Forestry. (Three editions issued) By Shirley W. Allen. 56 pp. Society of American Foresters, Washington, D. C. 1949. 25 cents. (Out of print; not available.)

A National Program of Forest Research—Prepared by Earle H. Clapp: Report of a Special Committee on Forest Research of the Washington Section, Society of American Foresters. 232 pp. Published by American Tree Association for Society of American Foresters, Washington, D. C. November 1926. (Out of print; not available.)

Problems and Progress of Forestry in the United States. Report of the Joint Committee on Forestry of the National Research Council and the Society of American Foresters, Henry S. Graves, chairman. 112 pp. Society of American Foresters, Washington, D. C. 1947. $1.75.

Professional Forestry Schools Report. Prepared by H. H. Chapman. 174 pp. Society of American Foresters, Washington, D. C. 1935. $1.50.

Proceedings: Society of American Foresters' Meeting, Minneapolis, 1947. 507 pp. Illus. Society of American Foresters, Washington, D. C. 1948. $3.

Proceedings: Society of American Foresters' Meeting, Boston, 1948. 420 pp. Illus. Society of American Foresters, Washington, D. C. 1949. $3.

Suggestions for Contributors to the Journal of Forestry. By Henry E. Clepper. 31 pp. Society of American Foresters, Washington, D. C. 1938. 25 cents. (Out of print; not available.)

A Survey of State Forestry Administration in Colorado. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings; Consultant, John B. Woods. 38 pp. Mimeo. Society of American Foresters, Washington, D. C. January 1948. (Out of print; not available.)

A Survey of State Forestry Administration in Idaho. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, John B. Woods; Consultant, Alfred B. Hastings. 35 pp. Mimeo. Society of American Foresters, Washington, D. C. May 1948. (Out of print; not available).

A Survey of State Forestry Administration in Kentucky. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings. 49 pp. Mimeo. Society of American Foresters, Washington, D. C. June 1946. (Out of print; not available.)

A Survey of State Forestry Administration in Massachusetts. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings; Consultant, John

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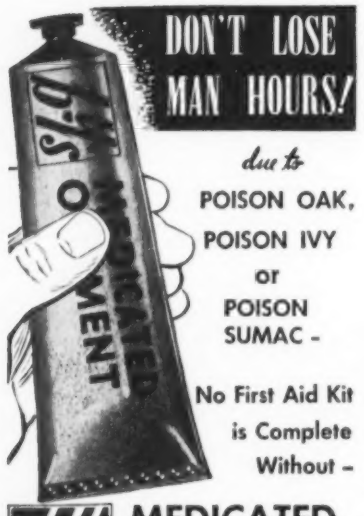

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BACHELOR CLUBS, composed of numbers of drake ducks, are often found 200 miles from the nesting hens.

B. Woods. 33 pp. Mimeo. Society of American Foresters, Washington, D. C. 1948. (Out of print; not available.)

A Survey of State Forestry Administration in North Carolina. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings. 38 and X pp. Society of American Foresters, Washington, D. C. 1946. (Out of print; not available.)

A Survey of State Forestry Administration in Ohio. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings; Consultant, John B. Woods. 44 pp. Society of American Foresters, Washington, D. C. 1947. (Out of print; not available.)

A Survey of State Forestry Administration in Rhode Island. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Austin F. Hawes. 31 pp. Mimeo. Society of American Foresters, Washington, D. C. March 1946. (Out of print; not available.)

A Survey of State Forestry Administration in Tennessee. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings; Consultant, John B. Woods. 41 and V pp. Society of American Foresters, Washington, D. C. 1947. (Out of print; not available.)

A Survey of State Forestry in West Virginia. Joint Committee of Society of American Foresters and Charles Lathrop Pack Forestry Foundation; Project Leader, Alfred B. Hastings; Consultant, John B. Woods. 42 pp. Mimeo. Society of American Foresters, Washington, D. C. 1946. (Out of print; not available.)

A Syllabus on Professional Ethics as They Relate to the Profession of Forestry. Archie E. Patterson. 15 pp. Mimeo. Society of American Foresters, Washington, D. C. 1949. 30 cents.

Books Sponsored by S.A.F.

Forest Education. By Henry S. Graves and Cedric H. Guise. (Report of Committee on the Forest Education Inquiry conducted by the Society of American Foresters under a grant from The Carnegie Corporation.) 421 pp. Yale University Press, New Haven, Conn. 1932. $2.50.

A Guide to Forestry Activities in North Carolina, South Carolina, and Tennessee. Compiled by Appalachian Section, Society of American Foresters; William Maughan, editor-in-chief. 287 pp. Miller Printing Co., Asheville, N. C. January 1939. Cloth bound, $2.25.

Important Tree Pests of the Northeast. (Two editions) Edited by Committee on Tree Pest Leaflets, New England Section, Society of American Foresters, Henry I. Baldwin, chairman. 191 pp. Illus. Evans Printing Co., Concord, N. H. 1952. $2.

Research in the Economics of Forestry. Edited by William A. Duerr and Henry J. Vaux. (Sponsored by the Charles Lathrop Pack Forestry Foundation and the Society of American Foresters, and carried out by a Society committee.) 475 pp. Charles Lathrop Pack Forestry Foundation, Washington, D. C. 1953. $6.

The Small Timber Owner and His Federal Income Tax. By Ellis T. Williams. Agriculture Handbook No. 52. (Project originated by Committee to Study Effect of Forest Taxation on Forest Practices, Society of American Foresters.) 55 pp. Supt. of Documents, Washington 25, D. C. February 1953. 20 cents.

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Announcement of Applicants

Applicants for admission, advancement, or reinstatement whose membership applications were received in the Society office during the month of July are listed below.

Action regarding the eligibility of these applicants will be taken by the Council as of October 1, 1953. Any communications from voting members relating to the membership eligibility of any of these applicants should be received in the Society office prior to that date.

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Allegheny Section

Member Grade

Elliott, H. E., Dist. Forester, Pa. Dept. of Forests and Waters, Coudersport, Pa.; Mont Alto, B.S. (Forestry), 1909. (Junior, 1938).

Central State Section

Junior Grade

Students Eligible for Automatic Advancement

UNIVERSITY OF MICHIGAN

Boubelik, C. F.	Kettenbeil, D. H.
Bowman, R. P.	Leach, M. S.
Curry, J. C.	Morgan, J. M.
Eber, M. L.	Sharer, D. R.
Galusha, H. H.	Thomas, K. N.
Haas, R. G.	Tom, L. C.
	Yates, D. A.

Member Grade

Stoker, R. S., Line Standards Engr., Royal Oak, Mich.; Univ. of Mich., B.S.F., 1938. (Junior, 1944).

Columbia River Section

Junior Grade

Pryor, D. R., Forester, Bur. of Land Mgmt., Portland, Ore.; Purdue Univ., B.S.F., 1950.

Gulf States Section

Affiliate Grade

Baker, J. F., Box 341, Jena, La.; L.P.I., B.S. (Forestry), 1953.

Member Grade

Scott, S. J., Dist. Forester, Int. Paper Co., Zwolle, La.; Iowa State, B.S.F., 1938. (Junior, 1939R48).

Inland Empire Section

Member Grade

Arthurs, A. J., Thr. Mgmt. Asst., U.S.F.S., Priest River, Idaho; Univ. of Idaho, B.S.F., 1935. (Junior, 1946).

Barnett, S., Partner and Mgr., Penta Post and Treating Co., Boise, Idaho; Univ. of Idaho, B.S.F., 1948. (Junior, 1950).

Beaman, D. W., Ranger, St. Joe Natl. Forest, St. Maries, Idaho; Mont. State, B.S.F., 1946. (Junior, 1946).

Bingham, R. T., Pathologist, Blister Rust Control, Spokane, Wash.; Univ. of Idaho, B.S.F., 1940; M.S.F., 1942. (Junior, 1945R49).

Brischle, H. A., Area Leader, U.S.D.A., Spokane, Wash.; Wash. State, B.S., (Engr.), 1928. (Junior, 1946).

Cooley, E. E., Ranger, Red River Ranger Sta., Grangeville, Idaho; Mont. State, B.S.F., 1941. (Junior, 1944).

Faulkner, H. J., Area Leader, Blister Rust Control, Spokane, Wash.; Wash. State (2½ yrs.).

Summerside, G. W., Ranger, Coeur d'Alene Natl. Forest, Coeur d'Alene, Idaho; Univ. of Idaho, B.S.F., 1941. (Junior, 1946).

Intermountain Section

Junior Grade

Wadsworth, H. W., 756 North First E., Logan, Utah; Utah State Agric. College, B.S.F., 1952.

Kentucky-Tennessee Section

Member Grade

Ballard, J. J., Dist. Ranger, U.S.F.S., Tellico Plains, Tenn.; Mont. State, B.S.F., 1939. (Junior, 1946).

Hitchcock, W. J., Mgr., Cumberland Case Co., Chattanooga, Tenn.; Univ. of Fla., B.S.F., 1949; M.S.F., 1950. (Junior, 1949).

New England Section

Affiliate Grade

Heath, C. N., Jr., Jr. Forester, N. H. Forestry and Recreation Dept., Concord, N. H.; Univ. of N. H., B.S. (Forestry), 1951.

New York Section

Junior Grade

Students Eligible for Automatic Advancement

STATE UNIVERSITY OF NEW YORK

Andresen, J. W. Leak, W. B.

Member Grade

Felts, F. H., Forester, N. Y. State Cons. Dept., Northville, N. Y.; State Univ. of N. Y., B.S.F., 1942. (Junior, 1946).

Lea, R. V., Forester-in-charge, Tully Forest and College Exp. Sta., Syracuse, N. Y.; State Univ. of N. Y., B.S.F., 1946; M.F., 1948; Ph.D., 1953. (Junior, 1946).

Roberts, A. W., Forester, N. Y. State Cons. Dept., Lowville, N. Y.; State Univ. of N. Y., B.S.F., 1941; M.F., 1949. (Junior, 1946).

Northern California Section

Junior Grade

Manning, R. A., Cruiser, Shasta Forests Co., Redding, Calif.; Oregon State, B.S.F., 1948.

Northern Rocky Mountain Section

Junior Grade

Students Eligible for Automatic Advancement

MONTANA STATE UNIVERSITY

Blake, C. D.	Johnson, J. W.
Covey, W. H.	Karr, R. W.
Edstrom, N. A.	Marks, R. T.
Holzweissig, A. C.	Swift, D. D.
Jacobsen, A. J.	Weistaner, D. A.

Ozark Section

Junior Grade

McCoy, E. W., Instructor in Forestry, Ark. A. & M., College Heights, Ark.; Purdue Univ., B.S.F., 1950; M.S.F., 1952.

Students Eligible for Automatic Advancement

UNIVERSITY OF MISSOURI

McDonald, N. A.

Member Grade

Wells, H. R., State Forester, S.C.S., Oklahoma City, Okla.; Univ. of Nebr. (Forestry-Biology), B.A., 1920.

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ARTHUR NAPERT, right, one of the operators of WHITE MOUNTAIN LUMBER CO., BERLIN, N. H., inspects OSMOSE treating operation in his plant.

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The ever growing demand for treated lumber, constantly amazes Foresters and Lumbermen alike. Probably even more surprising is the substantial plus profit derived from this relatively simple facet of the timber growing and lumber producing industry.

Typical of this new realization of the potential in wood treating is this statement from Arthur Napert, one of the operators of the White Mountain Lumber Co. of Berlin, N. H., who recently told us: "You know, I have known about Osmosalts and the Osmose Wood Treating Process for some years, but didn't pay too much attention to it until I had a talk with Howard Mendenhall one day. Howard is an Osmose Forester and sales representative, and he filled me in on the potential profit that exists for franchised Osmose Treaters. Naturally, I took this conversation with 'a grain of salt' but I can now truthfully say, after a year's operation, that the financial return has been *more than I expected.*"

White Mountain Lumber Co. is one of New Hampshire's more important lumber producers and is a supplier for many of the large paper mills located in that part of the country. Mr. Napert's statement is typical of Foresters and Lumbermen, all across the nation, who have finally investigated the simple investment and the substantial profits that are the main factors in becoming a franchised producer of OSMOSE TREATED LUMBER. If you are interested, you can easily get all the details, without obligation, by writing John L. Surdam, Vice President and General Manager, Osmose Wood Preserving Co. of America, Inc., 980 Ellicott St., Buffalo 9, N. Y.

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Puget Sound Section

Junior Grade

Hagsten, J. E., General Delivery, North Richland, Wash.; Univ. of Idaho, B.S.F., 1951.

Affiliate Grade

Kittila, E. A., Cons. Aide, S.C.S., Sedro Wooley, Wash.

Looney, W. S., Asst. Forest Mgr., South Olympic Tree Farm Co., Shelton, Wash.; Washington State, B.S. (Forestry), 1947.

Southeastern Section

Junior Grade

Students Eligible for Automatic Advancement

UNIVERITY OF GEORGIA

Creech, G. L.

Member Grade

Dotts, J. T., Forester, Gair Woodlands Corp., Savannah, Ga.; West Virginia Univ., B.S.F., 1939. (Junior, 1945).

Holekamp, J. A., Logging Engr., American Pulpwood Assoc., Sylacauga, Ala.; Univ. of Mich., B.S.F., 1943; M.S.F., 1946. (Junior, 1946).

Oppenheim, W. E., Woodland and Wood Procurement Mgr., Armstrong Cork Co., Pensacola, Fla.; Univ. of Ga., B.S.F., 1942. (Junior, 1946).

Ruark, H. E., Asst. Director, Fire Control, Ga. Forestry Comm., Atlanta, Ga.; Univ. of Ga., B.S.F., 1941. (Junior, 1946).

Stimpson, W. H., Vice Pres., Southern Pine and Hardwood Lbr. Co., Univ. of Ga., B.S.F., 1941. (Junior, 1946).

Southwestern Section

Junior Grade

Hansen, W. L., Asst. Regional Forester, U.S.F.S., Albuquerque, New Mexico; Utah State Agric. College, B.S.F., 1931; N. C. State, M.S.F., 1933. Reinstatement.

Member Grade

Elsbree, C. C., Dist. Forest Rgr., Pinedale, Ariz.; Pa. State, B.S.F., 1938. (Junior, 1938R49).

Upper Mississippi Valley Section

Junior Grade

Students Eligible for Automatic Advancement

UNIVERSITY OF MINNESOTA

Adams, G. L.	Haff, A. S.
Arkins, R. J.	Magnuson, W. R.
Crosby, C. E.	McGown, J. E.
Ferguson, D. D.	Myshak, R. J.
Gilbert, G. W.	Perske, R. A.

Lyle F. Watts Receives Sc.D. Degree from Utah State

Lyle F. Watts, retired chief of the Forest Service, was granted the Doctor of Science degree at the 60th Annual commencement of the Utah State Agricultural College, June 1.

The degree was conferred upon Mr Watts because of his accomplishments in the promotion of forestry both in this country and abroad. He organized the forestry department at Utah State Agricultural College, and was its first head in 1927-1928, at which time he was loaned by the Forest Service for this purpose.

Forestry News

A.F.P.I. Holds Farm Woodlot Conf.

Public and private foresters and others concerned with the management of the U. S.'s more than 261,000,000 acres in small farm-size woodlands held a National Farm Woodlot Conference in Chicago, June 25 and 26. The meeting was called by American Forest Products Industries, and its chairman was Charles H. Sage, vice president of the Kimberly-Clark Corp.

A.F.P.I., a non-profit organization, called the first small woodland conference seven years ago, at a time when the matter of bringing the country's small woodlands into full and continuing production was recognized by foresters as a serious forestry problem. The recent Chicago meeting was designed to provide an assessment of the progress made in meeting the problem.

Principal speakers at the meeting included Col. William B. Greeley, vice president of the West Coast Lumbermen's Assn., who opened the session, and Richard E. McArdle, chief of the U. S. Forest Service.

According to Col. Greeley, 57 percent of the commercial forest land in the United States, and 75 percent of all the private commercial forest land is made up of small woodlands averaging 62 acres each.

Mr. McArdle stated that farm woodlots in the United States produce about $700,000,000 worth of sawlogs and other forest products a year, and that at present "somewhere around 15 percent of the small-owner acreage is now in the good management class." In 1945 only about four percent of the small forests were being handled well enough to grow reasonably adequate timber crops for the future, he added.

Foresters from companies in Mississippi and Tennessee, and from the Pacific Northwest described the well organized Tree Farm programs in their areas. A former associate editor of the JOURNAL, W. D. Hagenstein, of the Industrial Forestry Association of Portland, Ore., told of the activities of the more than 750 professional foresters now employed in the Douglas-fir region of Oregon and Washington, and of their close association with the Tree Farm program there.

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According to W. B. Hammerle, of the Southern Pine Association, and Harris A. Reynolds, of the New England Forestry Foundation, their association members, in common with industrial foresters the country over, and although primarily employed on company-owned land, make their services available to private woodland owners in their areas.

Samuel T. Dana, dean emeritus of University of Michigan's School of Natural Resources, commented on the need of assistance for the small woodland owner, and said ". . . with respect to the controversial subject of free service, my own reaction is in favor of making a nominal or substantial charge for service rendered by public agencies in the form of actual assistance in the management of the forest. People actually value more highly that which costs them something than that which does not."

Other speakers included W. C. Finley, of the American Walnut Manufacturers Assn., and the Veneer Assn.; E. L. Colby, of the Western Pine Assn.; Harry M. Roller, International Paper Co.; Henry J. Malsberger, Southern Pulpwood Conservation Assn.; Richard Kilbourne, of T.V.A.; and C. B. Manifold, of the Soil Conservation Service.

500 Forest Fires a Day in 1952

An average of more than 500 forest fires a day was reported during calendar year 1952 by state and federal agencies engaged in fighting forest fires.

Forest Service field offices, state forest services, the Department of Interior, Soil Conservation Service and the Tennessee Valley Authority reported 188,277 forest fires last year. While this represents an increase of 15 percent over the 164,090 forest fires reported in 1951, it is well under the five-year average of 190,000 fires. Forest fires averaged 210,000 per year up to 1942 when the present nationwide Cooperative Forest Fire Prevention Campaign was launched under sponsorship of the Advertising Council.

This program — which features Smokey the Bear, and the intensive State Keep Green programs, coupled with support of conservation and youth groups—has developed public awareness to the need for forest fire prevention. Proof of this is the fact that in 1942 national forest lands showed one fire per 3,000 visitors while in 1952 only one fire was started per 5,000 visitors.

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Fires burned a total of 14,187,325 acres in 1952 as compared to 10,781,039 acres in 1951 and a five-year average burn of about 16,296,000 acres.

Reason for the increase in the number of fires and the acreage burned in 1952, was the long period of extremely dry weather throughout the country during the months of October and November, coupled with an increased use of the woods. Ninety-four percent of last year's fires were man-caused.

Congress Restores Funds For Forestry Extension Service

Two positions in the forestry program of the Agricultural Extension Service, which were to have been discontinued because of cuts in the Federal agricultural budget for the fiscal year beginning July 1, (p. 390, JOURNAL OF FORESTRY, May, 1953) have been reinstated by recent action of Congress in restoring the funds needed to carry on the work.

The two positions, filled by W. K. Williams and A. M. Sowder, one for the eastern half and the other for the western half of the U. S., carry on the work under the Clarke-McNary Law of 1925.

Pres. Drake Featured on Nat'l Farm and Home Hour

George L. Drake, S.A.F. president, and vice president of the Simpson Logging Company, appeared on the National Farm and Home Hour June 27, to help commemorate the one hundredth anniversary both of the state of Washington and of its logging and lumbering industry.

In an interview originating over station KOMO, Seattle, President Drake joined with Harvey L. Rendsland, of Tahuya, Washington, owner of a 1,000-acre tree farm, and Hillman Luedde-mann, vice president and general manager of the Pope and Talbot Lumber Co. of Port Gamble Bay, to discuss the cooperation between the small woodland owner and independent logger, and the large lumber companies and logging firms in the Puget Sound area; and the close work between the lumber companies and the users of

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wood and producers of wood products.

President Drake stated that with present-day public and private forest management, the Puget Sound "forest industry communities can plan for another hundred years with confidence."

He went on to say that 138,000 acres of the country's best commercial forest land is in 4,000,000 farm woodland ownerships. He said that the tree farm movement is now in effect in 35 states, and that it is being supported not only by private interests, but by state and federal foresters as well.

This was the third time that western foresters—the West Coast Lumbermen's Assn., the Industrial Forestry Association, and individual forest industry companies—had cooperated with the National Farm and Home Hour in presenting forestry problems and accomplishments to the nation. In 1951 a program featuring Douglas McKay, then Governor of Oregon, Governor Arthur B. Langlie of Washington, and several prominent West Coast foresters, celebrated the 10th anniversary of the Tree Farms movement; and in 1952, a broadcast featured short-wave radio development in industrial forestry.

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New York College of Forestry Announces Recent Appointments

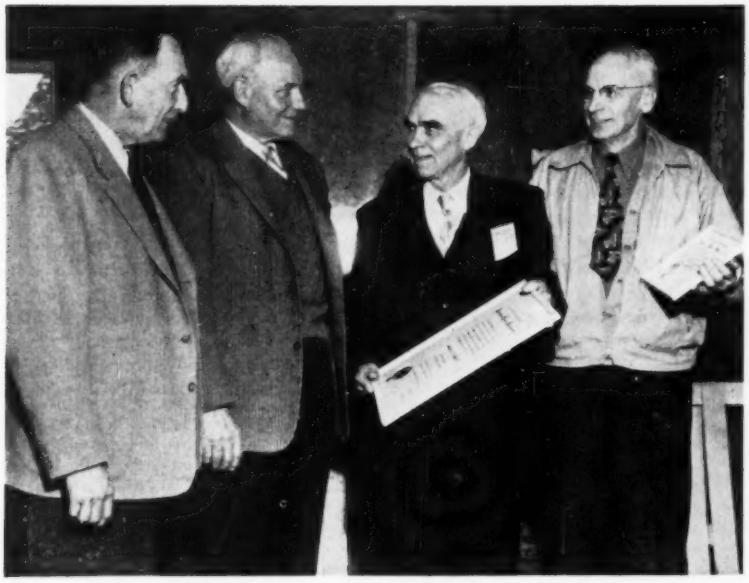
Harold G. Wilm, an associate editor of the JOURNAL OF FORESTRY, has accepted the position of associate dean of biological sciences and graduate studies, it was announced recently by the State University of New York College of Forestry. At the same time it was announced that Jerome G. Kovalcik has been appointed assistant professor of forest extension; Charles H. Leigh has been named research assistant in forest chemistry, a new post at the college; and Richard E. Pentoney has been appointed instructor in wood technology.

Dr. Wilm is presently chief of the division of forest influences in the U. S. Forest Service. He joined the Forest Service in 1932 after receiving his Ph.D. degree from Cornell, and served in the Lake States, California, and Rocky Mountain forest experiment stations. During his stay at the latter, he taught at Colorado A. and M. college.

Mr. Kovalcik has been professor of English at Champlain College.

Dr. Leigh is currently working at the Atomic Energy Commission's Brookhaven, L. I. laboratory, and, at the college, will conduct studies in radioactive isotopes in cooperation with the A.E.C. He has also been a research chemist for the I. E. duPont Company in Richmond, Va.

Mr. Petoney succeeds Lawrence Leney who resigned to join the faculty of the department of forestry at the University of Missouri. He is a graduate of the University of California and a former employee of the U. S. Forest Service and Weyerhaeuser Timber Co.



PICTURED during recent giving of awards at the University of Washington Alumni Association meeting, are (left to right): Arthur K. Roberts, president of Alumni Association; Henry Schmitz, president of the University; Willis G. Corbitt; and E. T. Clark.

W. G. Corbitt and E. T. Clark Receive Univ. of Wash. Awards

Willis G. Corbitt, a 1920 graduate of the University of Washington College of Forestry, was awarded the Foresters' Alumni Association scroll, given annually to an alumnus who has made an outstanding contribution to forestry and the college, at the Alumni Association meeting May 9.

Mr. Corbitt, who is employed by the Crown Zellerbach Corp. in Molalla, Ore., received the award for his work in the field of logging engineering and for his support of the College of Forestry.

In addition to the award given Mr. Corbitt, an honorary membership in the Alumni Association was presented to E. T. Clark, of Seattle who was for a number of years a member of the staff of the College of Forestry, and who organized the first courses and curriculum in logging engineering.

Ralph A. Sheals Retires from Bur. of Ento. and Plant Quar.

Ralph A. Sheals, since 1949 an assistant chief of the Bureau of Entomology and Plant Quarantine, retired on June 30. Mr. Sheals has been with the Department of Agriculture since 1917, and from that date until 1928 was employed on white pine blister rust control work in Rhode Island. From 1929 until 1942 he was assistant leader of the Division of Domestic Plant Quarantines, and aided in the work of organizing quarantine inspection of plants and plant products in transit, and aided in the campaigns against such pests and plant diseases as grasshoppers, chinch bugs, and citrus canker.

From 1942 to 1947 Mr. Sheals was in charge of the Division of Gypsy Moth Control, and in 1948 he assisted in organizing the golden nematode control project.

Mr. Sheals graduated from New York State College of Forestry in 1917, specializing in forest insects.

Gruschow Becomes Leader at Tidewater Research Center

George F. Gruschow, formerly in charge of the Forest Management Project at the Olustee Experimental Forest, has been promoted to leader at the Tidewater Research Center, Franklin, Va., according to an announcement made by E. L. Demmon, director of the Southeastern Forest Experiment Station.

Mr. Gruschow is a graduate of New York State College of Forestry and has a master's degree from the same school. He has been with the Forest Service since 1938. His war service

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was with the Corps of Engineers, and included duty in the Philippines where his outfit set up mills on Bataan Peninsula and sawed Philippine mahogany for the armed forces.

Robert W. Cooper, who has been part of the Lake City Research Center since 1946, has replaced Mr. Gruschow. Prior to his working at Lake City, he was with Forest Survey, and at the Hitchiti Experimental Forest.

Missouri to Hold Forestry Demonstration in Oct.

A forestry, logging, and sawmilling demonstration sponsored by the Missouri Agricultural Extension Service will be held October 1 and 2 in the Missouri Ozarks near Rolla.

Nelson Rogers, superintendent, Sinkin Experimental Forest, Salem, Missouri, is chairman of the committee on commercial exhibits.

Cooperating with the Agricultural Extension Service in this event are the following organizations: Department of Forestry, University of Missouri; Division of Forestry, Missouri Conservation Commission; Missouri Department of Resources and Development; United States Forest Service, Mark Twain and Clark National Forests, and the Northern Ozark Research Center of the Central States Forest Experiment Station; Chamber of Commerce of Rolla; the larger timber producers and wood-using industries in the Ozarks and adjacent areas; and the manufacturers, distributors, and dealers of forestry, logging, and sawmilling equipment.

Yale Graduate Student Wins Wood Award

Eric L. Ellwood of Australia, a candidate for the Ph.D. degree in forestry, has been named winner of the $350 Wood Award for 1953, the fourth consecutive time that this award has been won by a student in the Yale School of Forestry.

Graduate students throughout the country compete for the award which is given jointly by the Forest Products Research Society and the publishers of the magazine, *Wood and Wood Products*. The prize, consisting of money and a plaque, is given for the best paper based on original research on forest products by a graduate student in forestry or engineering schools. Mr. Ellwood's paper was entitled, "Properties of Beech in Tension Perpendicular to the Grain and their Relation to Drying."

He is a native of Melbourne, Australia, and will receive his Ph.D. degree during the coming year, after which he expects to return to Australia to work in the Division of Wood Preservation of the Australian Forest Products Laboratory.

N. Y. Photogrammetry Short Course

A five-day course in forest photogrammetry for woodland managers and their staffs will be given by the State University College of Forestry at Syracuse, N. Y., from October 12 to October 16. The purpose of the course is to analyze the potentialities and limitations of aerial photography in the economic operation of the forest. Prior college education is not required for admission.

With an emphasis on the practical application of the latest methods, the students will learn the principals of aerial photography as they apply to forest mapping, measurement, and administration. They will also study aerial photographic specifications and sources of coverage. Moreover, the course will include a discussion of available photogrammetric equipment.

The teaching staff of the course includes Professors John C. Sammi, Bruce T. Stanton, Carlyn C. Delavan, and Paul F. Graves of the department of forest management, Professor Miles J. Ferree, research associate in land use studies, and selected guest speakers.

Inasmuch as the enrollment in this course for beginners in photogrammetry is limited, early registration is advised. Complete information concerning the course can be secured from J. R. Meyering, Short Course Service, Dept. of Forest Extension, State University College of Forestry, Syracuse 10, N. Y.

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U. of Idaho School of Forestry Announces Name Change

The University of Idaho has advised the JOURNAL OF FORESTRY that since July 1, the School of Forestry is now known officially as the College of Forestry. Ernest Wohletz was recently appointed dean of the college (JOURNAL OF FORESTRY, August, 1953), to succeed D. S. Jeffers.

Mich. State Fellowship Available

The Forestry Department of Michigan State College has announced the availability of a Kimberly-Clark Corporation Fellowship in Forestry for the 1953-1954 academic year.

Stipend: The Fellowship carries a stipend of $1500. The recipient will be required to pay tuition fees. No assistance in teaching or research is required. The stipend is not subject to income tax deduction.

Eligibility and Selection Basis: The Fellowship is open to citizens of the United States who hold a Bachelor's degree in forestry. Selection will be made upon the basis of academic record, research ability, field experience, and letters of recommendation.

Study Program: The course of study will be arranged to meet the needs of the individual student. Through the Graduate School the Department offers the Master of Science and Doctor of Philosophy degrees.

The subject selected for research must be in the field of reforestation, silviculture, or forest economics of interest to the pulp and paper industry.

Applications: Applications for this fellowship should be filed by August 15, 1953. Application and admission blanks may be obtained from the Dean of the Graduate School or from the Head of the Forestry Department.

F.F.A. Award to D. C. Royal

Dan C. Royal, chief forester for Miller and Company, Inc., Selma, Alabama, was made an Honorary State Farmer of the Alabama Future Farmers of America at their 24th Annual Convention held at Auburn, Alabama, recently.

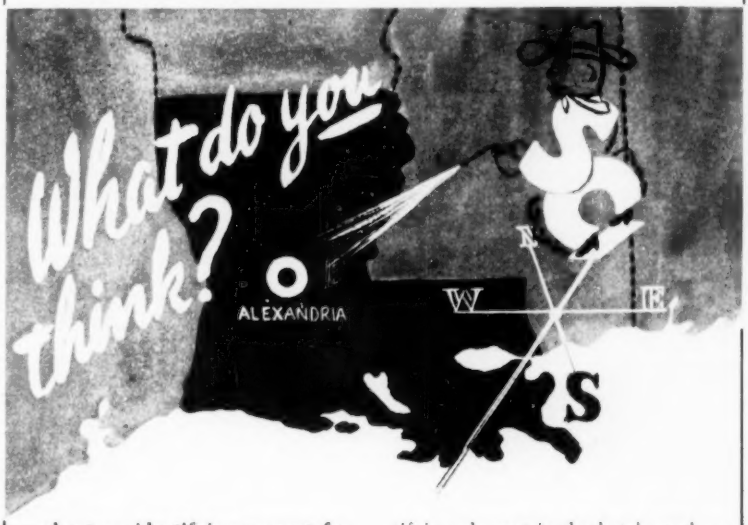
He, along with other leaders from business, industry, agriculture, and education in Alabama, was cited for the honorary degree because of his service to farm youth in the field of forestry throughout the state.

Another SOUTHERN GLO distributor:

ALLEN WALL PAPER—Alexandria, La.

now with complete stock of all colors, for immediate shipment.

We're proud to welcome these folks to our distributor network. Because many foresters have written for at-hand locations for SOUTHERN GLO, we have adopted a policy of making this available where and when you want it. If you have a regular source for your professional needs and would like for them to stock SOUTHERN GLO, let us know.



—about an identifying reagent for tree-marking paint?

Thus far we have not found too much interest in this procedure. Or more exactly, we have found a number of foresters thinking about it, but mostly they conclude it is, at present, an unnecessary precaution. However, we would like to have some more comments on this from the industry.

Mr. C. H. Schaeffer of Alabama, —who originally posed this question, elaborates as follows:

"I believe that the manufacturer would use say six identifying elements—one at a time. The manufacturer would record the element present in each batch, give each batch a number, —and label cans by batch number. Customers would keep track of batch numbers by jobs. In a question of substitution, the forester would write the manufacturer for identifying element in the batch used on the job questioned."

"Another angle", Mr. Schaeffer continues, "Would be for the manufacturer to supply customers with packages of identifying elements to be added to the paint when the forester felt a job needed such positive identification."

—See you at Convention!

SC SOUTHERN COATINGS & CHEMICAL COMPANY
Dept. K-2, Sumter, South Carolina

Wisc. Forestry Conference Planned

The Wisconsin Conservation Department has announced that all state forestry interests will meet in Milwaukee November 30 and December 1 to plan forest objectives for the next 25 years.

A similar conference was held 25 years ago, which preceded today's developments in that state. The original conference centered its attention on the one question of putting barren acres back into tree production. This year's conference will cover the multitude of problems now entering the picture, including wildlife production, small farm woodlot protection and management, and the application of the revised tax law for woodlots.

Wood Industry Executives Attend F.P.R.S. Meeting

Four hundred twenty-four wood industry executives attended the 7th annual meeting of the Forest Products Research Society in Memphis, June 15, 16, and 17, and took home with them ideas on cost cutting through statistical control, using carbide cutting tools for increased production, practical gluing of preservative-treated wood, and latest furniture finishing techniques.

In addition to the eight technical sessions, highlights of the meeting included tours of wood products plants in the area.

Mich. and Wis. Lumbermen to Hold Logging Congress

The Timber Producers Association of Michigan and Wisconsin will hold its eighth annual Lake States Logging Congress in Rhinelander, Wis., September 17, 18, and 19.

Industrial machinery and woods products will be displayed at the convention, both as static exhibits and as part of the annual parade through downtown Rhinelander, and exhibitors are also able to advertise their products in the Logging Congress Program.

Headquarters of the congress are in Ironwood, Michigan.

Wash. Forest Festival Marks 100 Years of Lumber Industry

The Ninth Annual Mason County Forest Festival was held in Shelton, Washington, May 14-16, this year commemorating the completion of 100 years of logging in Mason County and in the state of Washington itself.

An estimated 30,000 people witnessed the festival which featured a Paul Bunyan parade, and a loggers' sports show.

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Tree Farm Presentation (Florida Forest Service Photo)

Trees at work!

Apart from putting trees to work on our own scientifically managed woodlands, our Conservation Foresters are helping many private timberland owners to become good tree farmers—producing continuous crops of forest products, for a ready market, at a good profit.

International Paper COMPANY
SOUTHERN KRAFT DIVISION
Mobile, Alabama

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Walton 1953 Founders' Award

The Izaak Walton League has announced that entries are now being considered for awarding of the Founders' Award for 1953. "Representations in behalf of any person, group or institution" to be considered for the award should be addressed to the national offices at 31 North State Street, Chicago 2, Illinois, not later than Jan. 10, 1954, and information concerning the award may be obtained from that address.

Forestry Employment

S.A.F. members are privileged to insert one 60-word advertisement in this column without charge. Forest industries desiring to employ foresters may insert advertisements at the rate of $4 per column inch. Copy must be received by the end of this month for an advertisement to appear in the issue after next.

Obviously, the Society cannot assume responsibility beyond making it possible for prospective employee and employer to enter into negotiations.

Positions Available

Instructor and junior forester. Duties: supervision of forest tree nursery; research in reforestation in ponderosa pine region and farm tree plantings; teaching silvics and seeding and planting. M.S. degree with graduate work in silviculture or B.S. degree plus equivalent experience.

John F. Nagle, Acting Chairman, Department of Forestry and Range Management, State College of Washington, Pullman, Wash.

Positions Wanted

Teaching position desired in college in forestry or related subjects. Prefer college in Lake States or Central States regions but would consider other localities. B.S. and M.S. degrees in Forestry in Timber Management and minor in Wildlife Management. Age 29, married. Presently employed as forester with the government.

Box U, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester retiring from active field work. 22 years' experience in Southwest, in forestry, grazing, wildlife management, protection, and utilization with federal agencies. Currently employed in administration capacity. Desires change to position with future economic security.

Box V, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, Syracuse 1942; 34, married, two children. Two years' experience as district forester, and three years as forester for large southern land and saw mill company. Currently employed in latter capacity. Familiar with all phases of management. Capable of planning and supervising as well as doing. Prefer Gulf States.

Box W, Journal of Forestry, Mills Building, Washington 6, D. C.

Forester, 38, B.S.F. Syracuse, married, two children. Pre-college experience: business and technical. Now in sixth year as research aide in nationally known A.E.C. laboratory. Desires change from work too far from forestry, to position allied to forestry, offering responsibility and opportunity for advancement.

Box X, Journal of Forestry, Mills Building, Washington 6, D. C.

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International: loading

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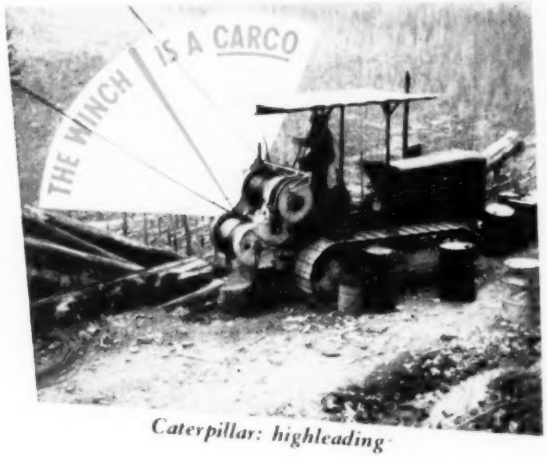

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You can expect greater value from the leader, and get it from Carco, first in winch production. Pacific Car and Foundry Company, Renton, Wash. Branches at Portland, Ore., and Franklin Park, Ill.

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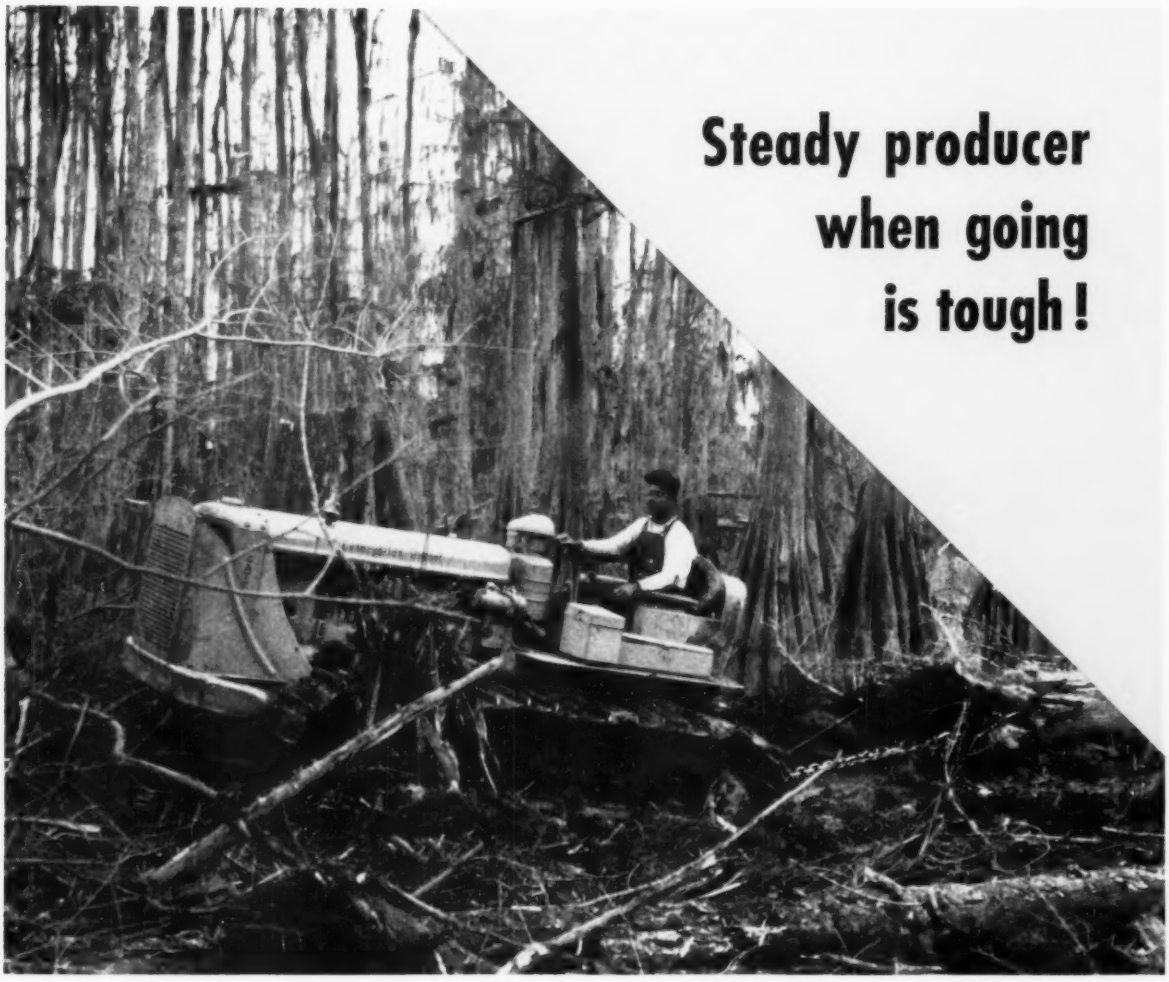

Steady producer when going is tough!

THERE'S a lot of small growth and the going is muddy in this cypress stand twenty miles northwest of Vicksburg, Miss. Snaking logs *profitably* here calls for a machine with the *power* to pull heavy loads, the *traction* to wade through muck, the *maneuverability* to avoid damaging small growth and the *stamina* to keep working day after day.

J. V. Valentine is getting this kind of performance from his Cat* D6 Tractors. He's using four of his ten on this operation. Production per 10-hour day averages 50,000 bd. ft. Two D6s snake out logs on a haul averaging ¼ to ½ a mile from woods to landing. The others, with 'dozers, pile logs for loading and maintain the road so trucks can get in.

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